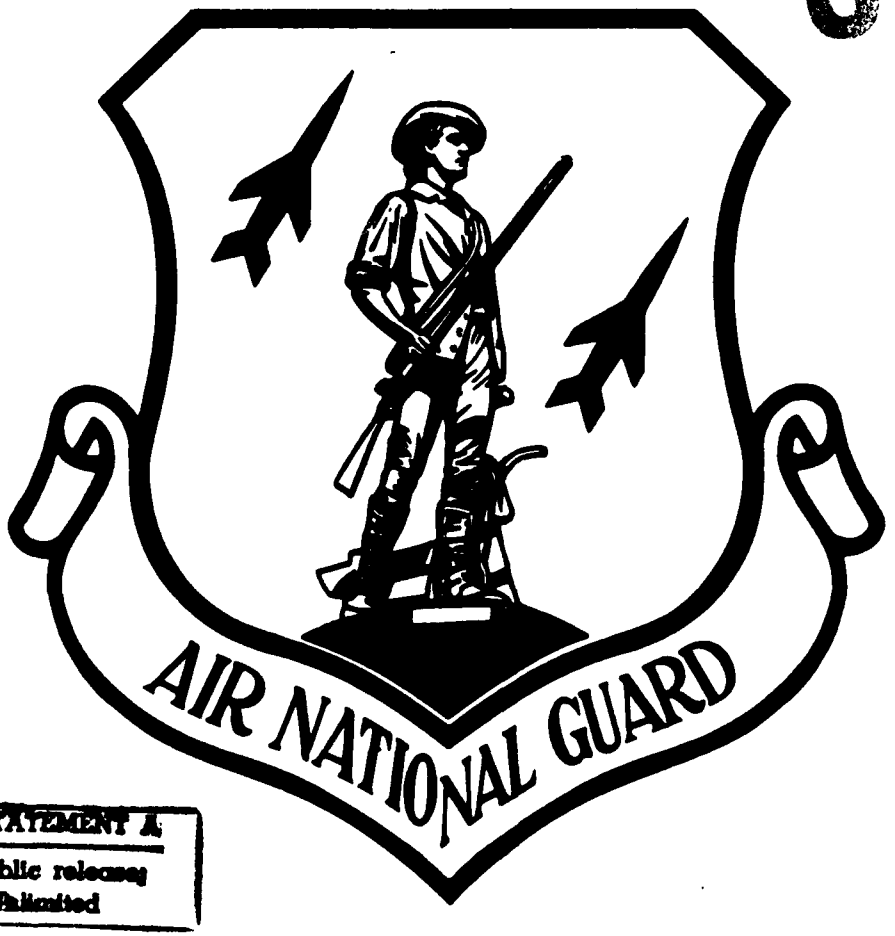
(1)

SITE INVESTIGATION REPORT

for

166TH TACTICAL AIRLIFT GROUP
DELAWARE AIR NATIONAL GUARD
GREATER WILMINGTON AIRPORT
NEW CASTLE, DELAWARE



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For the U.S. DEPARTMENT OF ENERGY under contract DE-AC05-840R21400

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Site Investigation of sites determined to possibly contain hazardous waste in quantities that might endanger public health. The study outlines the procedure used in the investigation and the results obtained. The data is used to determine if there is a risk to public health and the appropriate means of cleanup. The study was conducted under the Air National Guard's Installation Restoration Program.

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SITE INVESTIGATION REPORT
FOR
166TH TACTICAL AIRLIFT GROUP
DELAWARE AIR NATIONAL GUARD
GREATER WILMINGTON AIRPORT
NEW CASTLE, DELAWARE

Submitted to:

NATIONAL GUARD BUREAU
AIR NATIONAL GUARD SUPPORT CENTER
ANDREWS AIR FORCE BASE, MARYLAND,
THROUGH
HAZWRAP SUPPORT CONTRACTOR OFFICE
OAK RIDGE, TENNESSEE 37831

Operated by:

MARTIN MARIETTA ENERGY SYSTEMS, INC.
FOR THE
U.S. DEPARTMENT OF ENERGY

Submitted by:

E.C. JORDAN CO.
PORTLAND, MAINE
Job No. 5411-03

MAY 1990

DELAWARE ANG SITE INVESTIGATION
NEW CASTLE, DELAWARE

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NEW CASTLE, DELAWARE

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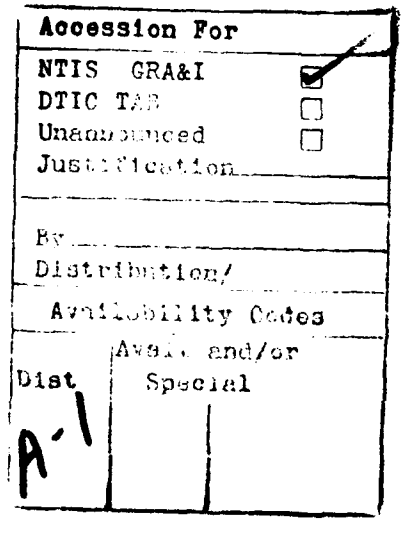


EXECUTIVE SUMMARY

This report describes the results of field investigations at the Delaware Air National Guard 166th Tactical Airlift Group (TAG) Facility (the Base), New Castle, Delaware. The property has operated under the U.S. Air National Guard since 1957, having previously been under the jurisdiction of the U.S. Air Force.

A previous study identified three sites for future study (HMTC, 1987). E.C. Jordan Co. (Jordan) completed a series of field and analytical investigations to evaluate the presence or absence of contamination at three identified sites and to gain an understanding of the geology and hydrogeology of the Base. These sites include the Refueling Parking Area (Site 1); the Petroleum, Oil, and Lubricant pumphouse area (Site 2); and Southeast Drainage Ditch (Site 5). During the field program, the presence of contamination was indicated at two basewide locations in the vicinity of the Aircraft Parking Area, a site evaluated in the HMTC study (1987). These two locations are identified as Sites 4A and 4B.

Jordan's field activities consisted of a soil organic vapor (SOV) survey, collection of six surface soil samples, completion of 16 soil borings with soil sampling at selected depth intervals, and installation of 14 monitoring wells and two piezometers. Soil was sampled for laboratory analysis for Target Compound List volatile and semivolatile organic compounds (VOCs and SVOCs), as well as lead and total petroleum hydrocarbons (PHCs). Groundwater samples were taken from all monitoring wells, and analyzed for the same series of compounds as the soil samples.

Site 1 - Refueler Parking Area. The investigations at Site 1 included an SOV survey, drilling of two soil borings with monitoring wells, collection of three surface and five subsurface soil samples, and a groundwater sample from each of the two monitoring wells. The results from the SOV survey indicated nondetect values for total PHCs and low values for total halocarbons (i.e., the sum of tetrachloroethene [PCE], trichloroethene [TCE], and 1,1,1-trichloroethane [TCA]). Surface soils at Site 1 detected elevated levels of SVOCs, PHCs, and lead, while subsurface soils only detected low levels of lead. Groundwater contamination was observed at Site 1 at one of two monitoring wells (MW-101), with elevated levels of VOC contamination (i.e., benzene, 1,1-dichloroethane, and ethylbenzene).

Site 2 - Petroleum, Oil, and Lubricant Pumphouse Area. Investigations at Site 2 included an SOV survey, drilling of three soil borings with monitoring well installation, and collection of three surface and seven subsurface soil samples. The SOV survey results indicated low values for total halocarbons, and very high values for total PHCs (i.e., 1,800 to 58,000 µg/ℓ). Surface and subsurface soils at Site 2 detected elevated levels of VOCs, SVOCs, PHCs, and lead. Groundwater from MW-103, MW-104, and MW-105 has elevated levels of VOCs, SVOCs, total PHCs, and lead.

Sites 4A and 4B - Aircraft Parking Area. Soil and groundwater contamination was also confirmed at two basewide locations in the vicinity of the Aircraft

Parking Area. Investigations at Site 4 included two monitoring wells, one subsurface soil sample, and two groundwater samples. VOC, SVOC, and total PHC contamination was detected in one subsurface soil sample from MW-111 (Site 4B). Elevated levels of VOCs, SVOCs, total PHC, and lead were also detected in groundwater from MW-111. Groundwater from MW-112 (Site 4A) was contaminated with low levels of halogenated VOCs (PCE and TCE).

Site 5 - Southeast Drainage Ditch. Field studies at Site 5 included an SOV survey, drilling five soil borings, installing five monitoring wells, and collecting seven subsurface soil samples. The SOV survey results indicated two areas of SOV contamination. An area located in the southern portion of Site 5 had total PHC values of 760 to 8,000 µg/ℓ, and lower total halocarbons values. A second area near a fenced storage facility detected elevated SOV total halocarbons and low total PHCs. VOC, SVOC, total PHC, and lead subsurface soil contamination was detected in the one soil boring (MW-108) located in the area associated with the elevated SOV contamination of PHC (southern portion of site). Groundwater contamination was also confirmed at Site 5. MW-108 detected fuel-related VOCs, SVOCs, total PHCs, and lead. Monitoring wells located near the halocarbon SOV contamination (MW-106, MW-107, MW-109, and MW-110) detected PCE and lead (fenced storage area).

Contamination at Sites 1, 2, and 5 is apparently related to past disposal practices and accidental spills. The source for contamination at Sites 4A and 4B is unknown and requires further study. Basewide characterization of the hydrogeology demonstrates that groundwater flow in the water table aquifer at the Base is south to southwest. When this hydrogeological information is combined with the analytical groundwater data, it demonstrates that potential exists for contaminated groundwater plumes to migrate off-base in a south to southwesterly direction at Sites 1, 2, 4A, and 4B.

Data relating to contamination distribution and the use of the water table aquifer are not sufficient to conduct a complete assessment of the risk to public health or the environment. Further study on public health and environmental receptors will be conducted in the Remedial Investigation (RI) as part of a risk assessment.

Jordan recommends that further studies be conducted at Sites 1, 2, 4A, 4B, and 5 to complete the groundwater and source area characterization, and to support a risk assessment and a feasibility study.

1.0 INTRODUCTION

As part of the Air National Guard (ANG) Installation Restoration Program (IRP), E.C. Jordan Co. (Jordan) conducted site investigations (SIs) at the Delaware Air National Guard 166th TAG Facility (the Base) in New Castle, Delaware. Jordan's work was performed under Task Order Y-04 from the Hazardous Waste Remedial Action Program (HAZWRAP) of Martin Marietta Energy Systems, Inc. HAZWRAP is assisting the ANG in implementing the IRP. This report describes the findings of field investigations at the Base.

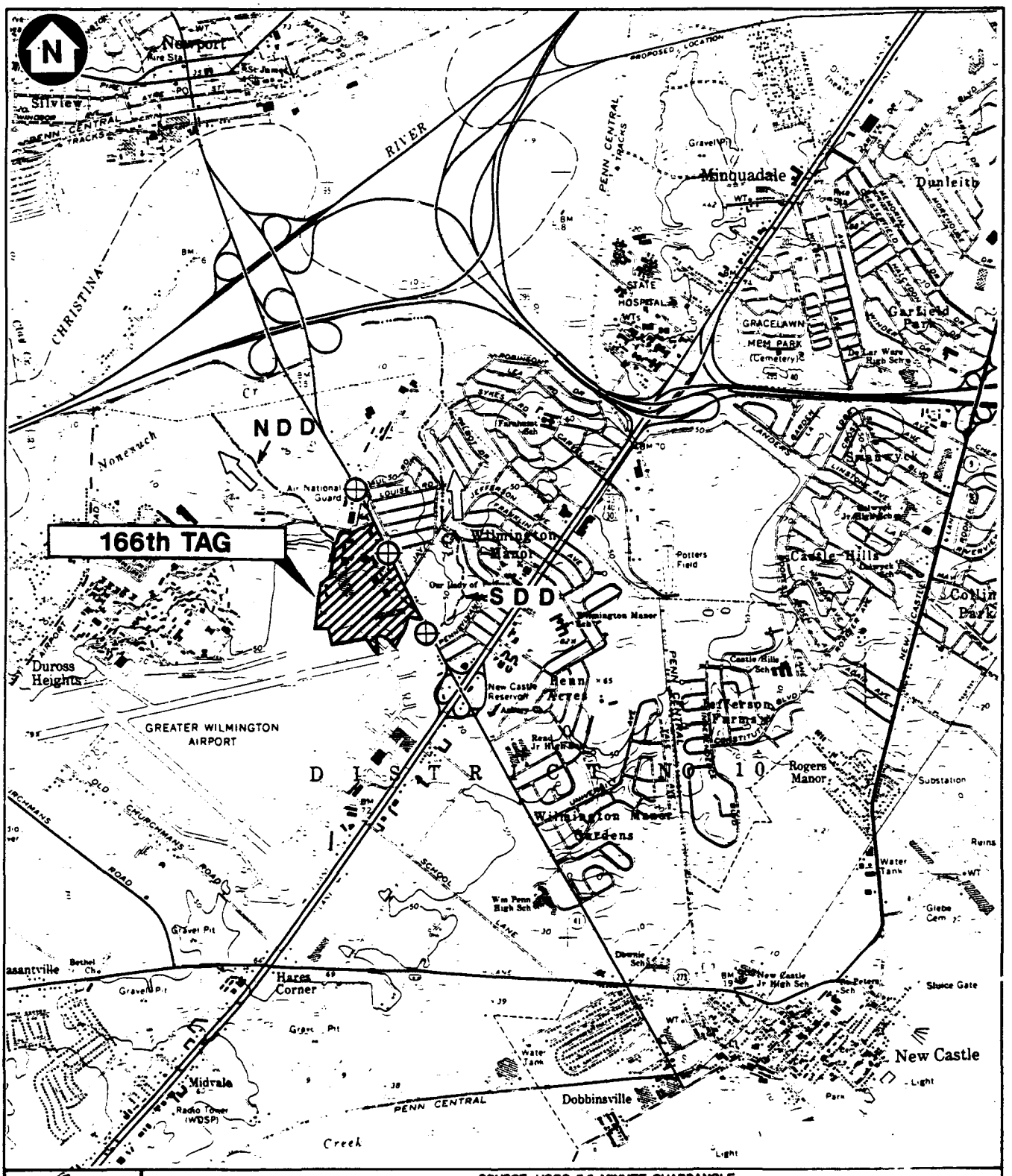
The Base lies between the Delaware and Christina Rivers, and is located in the northeastern corner of the Greater Wilmington Airport (GWA) in New Castle, Delaware, approximately 3 miles southeast of Wilmington, Delaware (Figure 1-1). The property has operated under the ANG since 1957, having previously been under the jurisdiction of the U.S. Army and U.S. Air Force (USAF). Subsection 1.3 describes the Base history in greater detail.

The Preliminary Assessment (Phase I Records Search) described five potential hazardous waste sites at the Base; three of which were recommended for further investigation (Hazardous Materials Technical Center [HMTC], 1987). The sites are Site 1: Refueler Parking Area; Site 2: Petroleum, Oil, and Lubricant pumphouse area; and Site 5: Southeast Drainage Ditch (SDD) (Figure 1-2). Site 1 is an area where refueler tank trucks parked and periodically purged their fuel tanks. The purged material was thought to potentially drain into the grassy area adjacent to Site 1. Approximately 20 years ago, Site 2 was the site of an approximately 10,000-gallon aviation gasoline (AVGAS) spill. Site 5 was an open ditch where wastes were disposed. The two sites (Sites 3 and 4) not recommended for further study are the Ruptured Fuel Line Aircraft Parking area (Site 3) and the Aircraft Parking Area (Site 4).

The site numbering throughout the IRP at the Base has not been consistent. The SI work plan (Jordan, 1988) for the Base was designed to study three sites; and these were numbered Sites 1, 2, and 3. Site numbers 1 and 2 in the SI work plan corresponded to Sites 1 and 2 as defined in the records search (HMTC, 1987). Site 3 in the SI work plan corresponds to Site 5 in the Phase I Records Search (HMTC, 1987). Site numbers in the SI report will be consistent with those defined in the Phase I Records Search. Table 1-1 outlines the site identification used in the various phases of the IRP.

Site 3 was associated with an inactive underground fuel line ruptured during excavation activities that resulted in a fuel loss of approximately 50 gallons. No environmental receptors were near the spill; therefore, it was decided that further IRP consideration was unnecessary (HMTC, 1987).

Site 4, located along the southern and western edges of the aircraft parking apron, was originally used by the Air Force. From 1960 to 1974 Capital Airways leased the area from the city of New Castle, and in 1976 the Base expanded the property they leased from the city to include the Site 4 area. Air Force and Base activities in the Site 4 area included airplane washing and general



DEL
QUADRANGLE LOCATION

0 1000 2000 3000
Scale in Feet

LEGEND

FLOW DIRECTION IN DRAINAGE DITCHES

PUBLIC WATER SUPPLY WELLS

SOURCE: USGS 7.5 MINUTE QUADRANGLE, WILMINGTON SOUTH, DELAWARE (REV. 1967)

FIGURE 1-1
SITE MAP
166th TAG
GREATER WILMINGTON AIRPORT
NEW CASTLE, DELAWARE

ECJORDANCO

5411-03

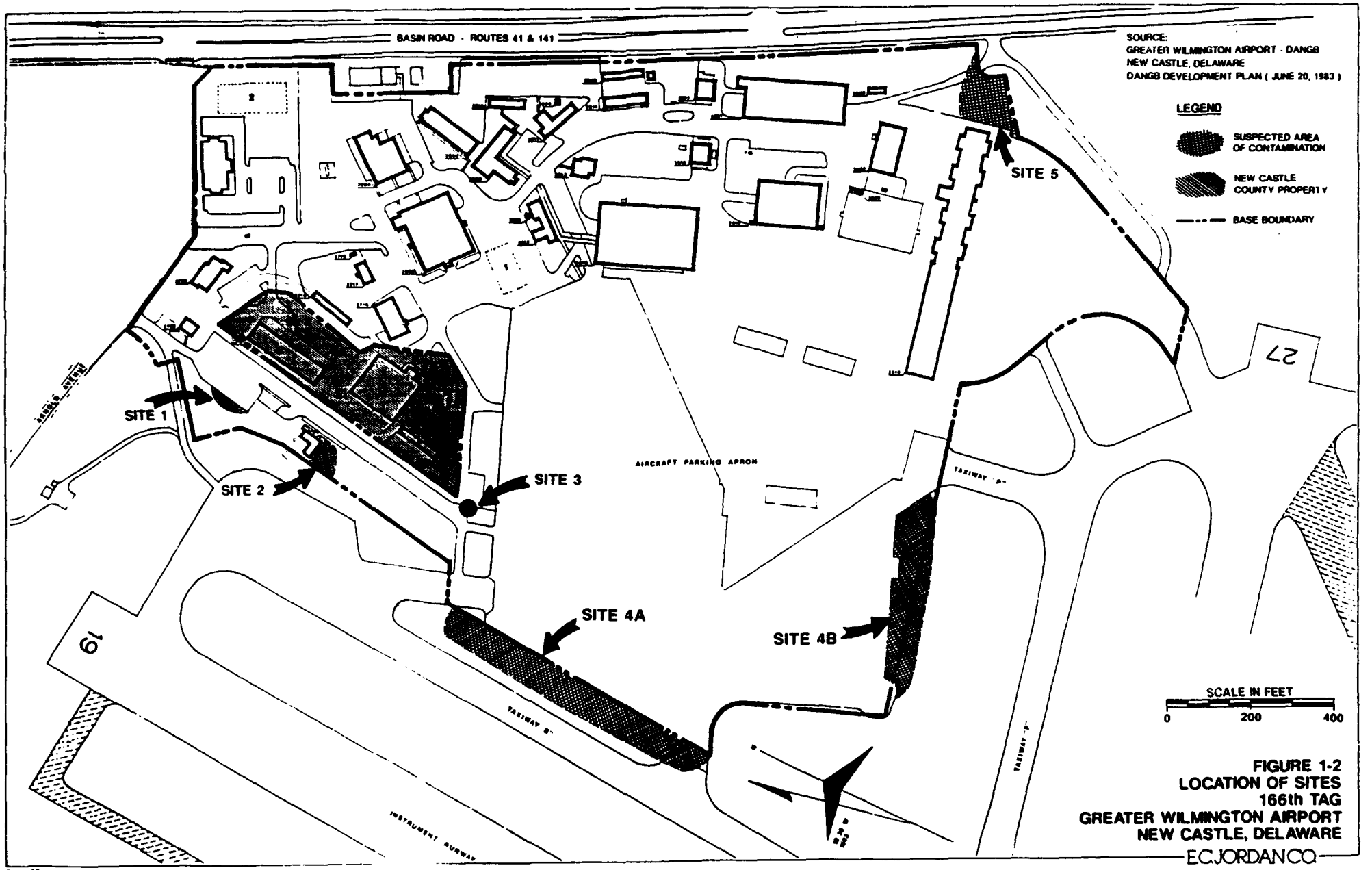


FIGURE 1-2
LOCATION OF SITES
166th TAG
GREATER WILMINGTON AIRPORT
NEW CASTLE, DELAWARE

E.C.JORDAN CO.

5411-03

TABLE 1-1
COMPARISON OF IRP SITE NUMBERS

166th TAG SITE INVESTIGATION
NEW CASTLE, DELAWARE

SITE NAME	SITE NUMBER		
	RECORDS SEARCH	SI WORK PLAN	SI REPORT
Refueler Packing Area	1	1	1
Petroleum, Oil, and Lubricant Pumphouse Area	2	2	2
Ruptured Fuel Line Parking Area	3	N/A	3
Aircraft Parking Area	4	N/A	4A/4B
Southeast Drainage Ditch	5	3	5

aircraft maintenance. An abandoned fuel line and fuel hydrants are located near the southern portion of Site 4.

During SI field activities, basewide explorations were sited in the general vicinity of Site 4, and field screening results from subsurface soils and groundwater indicated the presence of contamination. Based on this information, laboratory analytical samples were taken from these locations in the Site 4 vicinity and are reported in this Site Investigation report. The western edge of the Aircraft Parking Area is designated as Site 4A and the southern edge is identified as Site 4B (Figure 1-2).

This report presents findings from SI activities performed at the Base at Sites 1, 2, 4A, 4B, and 5 (see Figure 1-2). The scope of the SI and a discussion of Base history are outlined in Section 1.0. Field methodology and practices are described in Section 2.0. Section 3.0 summarizes data generated during the field program. Findings and conclusions are in Sections 4.0 and 5.0, respectively, and Section 6.0 discusses recommendations for future study at the Base.

1.1 PURPOSE AND APPROACH

The purpose of the Base SI study was to determine the presence or absence of contamination at Sites 1, 2, and 5.

1.2 SCOPE

The scope of the SI study includes the field investigations described in the Project Work Plan for SI, Remedial Investigation (RI), Feasibility Study (FS), and Remedial Design (RD) (E.C. Jordan Co., 1988). The SI field investigations included the following:

- a soil organic vapor (SOV) survey to detect volatile organic compounds (VOCs)
- completion of 14 monitoring wells and two piezometers
- collection of six surface soil samples
- collection of 23 subsurface soil samples
- groundwater sampling and permeability testing at new monitoring well and piezometer locations
- laboratory analysis of 29 soil and 14 groundwater samples
- a survey of locations and elevations of new monitoring wells and piezometers

Prior to the field investigations, Jordan also reviewed existing data, including previous geologic and hydrogeologic reports.

1.3 HISTORY AND PREVIOUS ENVIRONMENTAL INVESTIGATIONS

The GWA was operated as a U.S. Army airport in the early 1940s, and later as a USAF base. The Base has maintained operations at the airport since 1957. Various military aircraft types have been based and serviced at the Base; the present mission is a tactical airlift group (i.e., the 166th TAG). Both past and present operations involved the use of hazardous materials and disposal of hazardous wastes.

1.4 PHYSICAL AND CULTURAL SETTING NEAR THE BASE

Subsection 1.4 summarizes the physical and cultural environment at the Base. The Base is situated on the crest of a broad ridge approximately 70 feet above sea level, between the Delaware and Christina rivers in New Castle, Delaware. The ridge is an erosional and apparent structural feature of the Coastal Plain Province, resulting from Cretaceous and Pleistocene age geologic processes. Wilmington, Delaware's largest city, lies immediately north of the Christina River, approximately 3 miles from the Base. Residential complexes are situated 250 feet east, 1,000 feet west, and 4,500 feet south of the Base. An industrial park is situated 1,000 feet north of the Base. Hills of the Appalachian Piedmont Province, with surface elevations reaching more than 400 feet above sea level, are approximately 4 miles northwest of Wilmington.

The physiography of the 57-acre Base is characterized by smooth terrain, which slopes gently away from a northwest to southeast-trending broad ridge on the eastern perimeter of the Base. Two drainage ditches are located on the Base, ultimately draining into the Christina River north of the Base. The northwest drainage ditch (NDD) begins off-base, adjacent to Sites 1 and 2, and runs into Nonesuch Creek. The SDD begins in an underground surface drainage culvert near Site 5, and runs directly into the Christina River (see Figure 1-1). Nonesuch Creek has associated wetland areas. Much of the Base is paved and has been graded to provide efficient runoff to the ditches.

The climate of this area is tempered greatly by proximity to the Atlantic Ocean. National Weather Service records for the nearby GWA show that average annual precipitation was 41.25 inches from 1956 to 1985, and the net precipitation value was 9.56 inches per year. Average monthly precipitation is distributed relatively evenly throughout the year. The maximum recorded monthly precipitation is generally 7 to 8 inches, and record monthly minimums are between 0.5 to 1 inch. The record 24-hour rainfall is 6.24 inches; heavy rains occasionally occur in late summer and early fall. Most precipitation percolates into the soil and moves into subsurface aquifers.

Average annual air temperature is 54°F. January is the coldest month and July the hottest (temperatures average 32 and 76°F, respectively). The inflow of southerly winds across large water areas causes relative humidity to vary between 55 and 78 percent in a typical day.

1.5 GEOLOGIC CHARACTERIZATION

Subsection 1.5 is divided into two parts: a review of the regional geologic information, and a summary of site-specific conditions encountered during the investigation. The regional discussion is based on material presented in previous reports, published geologic literature, and visual observations made in the field. The site-specific information is based on observations and interpretation of the explorations described in Section 3.0.

1.5.1 Regional Geology

The Coastal Plain Province in the Wilmington area is characterized by unconsolidated sediments of Early and Late Cretaceous ages, uncomfortably overlain in most places by sediments of Pleistocene and/or Holocene ages (Woodruff, 1981).

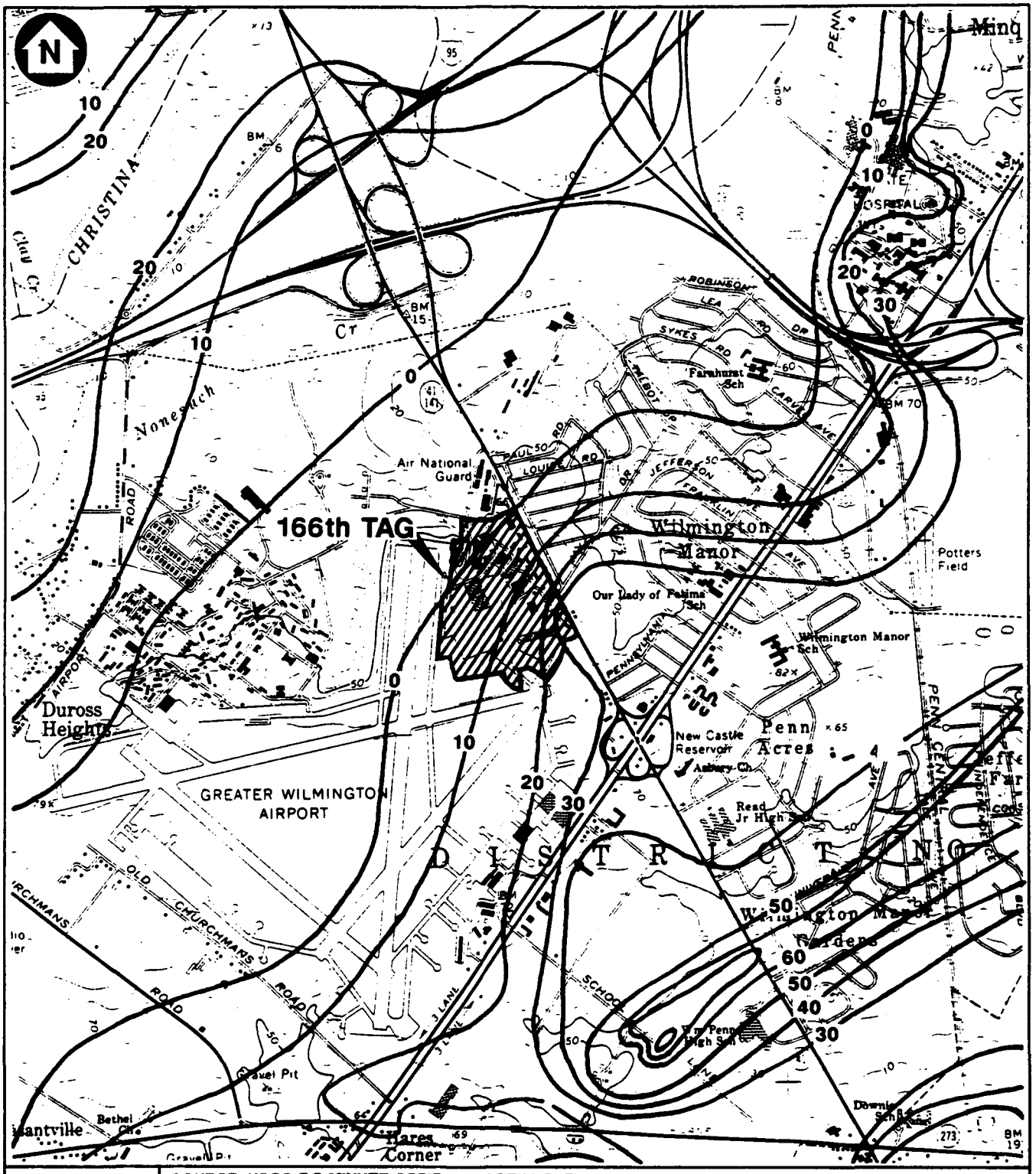
The Cretaceous deposits, called the Potomac Formation, consist predominantly of fluvial clays and silts with some interbedded sands. Available information indicates that these sands are commonly thin and irregular in the subsurface. The distribution and thickness of sand beds are not mapped in the Wilmington area, including the Base; however, thickness has been depicted along several lines of section off-Base (Woodruff, 1981). These sections suggest that the shallowest Potomac Sand may be only 30 to 40 feet below the land surface in the the Base vicinity. The top of the Potomac Formation in the Base vicinity appears to be within approximately 10 feet of the surface (Woodruff, 1984). Apparently, the formation dips gently toward the southeast.

The overlying Pleistocene sediments (i.e., the Columbia Formation) consist of poorly sorted fluvial sands with some interbedded gravels, silts, and clays (Woodruff, 1981). An isopach map of the Columbia Formation in the general Base area shows that the formation may be thin to absent in the northern part of the Base (Woodruff and Thompson, 1975) (Figure 1-3). This map also indicates that the thickness of the Columbia Formation reaches approximately 30 feet at the southeastern tip of the Base. Continuity of clayey layers above the water table is not known.

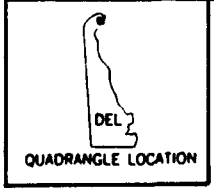
1.5.2 Base Geology

A total of 16 soil borings were drilled at the Base during the SI field program (see Subsection 2.2). All the soil test borings are interpreted to exceed the depth of the Columbia Formation, penetrating the underlying Potomac Formation. These relationships are shown in basewide geologic cross sections (Figures 1-4 through 1-7).

The Columbia and Potomac Formations are similar; in the absence of a clay layer that commonly occurs between the two formations, distinguishing the boundary is difficult. Subtle sedimentological and color differences are the criteria used to differentiate between the two formations when a clay layer is not present. Gravel lenses commonly occur in the Columbia Formation, and are typically absent in the Potomac Formation. The Columbia Formation is typically brown or orange in color; the Potomac Formation commonly has lenses of red, purple, and white clay, and blue-gray sand. Therefore, the absence of gravel lenses and



SOURCE: USGS 7.5 MINUTE SERIES QUADRANGLE, WILMINGTON SOUTH, DEL.-N.J., 1967



LEGEND

10 COLOMBIA ISOPACH

SCALE IN FEET

0 2000 4000

FIGURE 1-3
ISOPACH MAP OF COLOMBIA FORMATION
166th TAG
GREATER WILMINGTON AIRPORT
NEW CASTLE, DELAWARE

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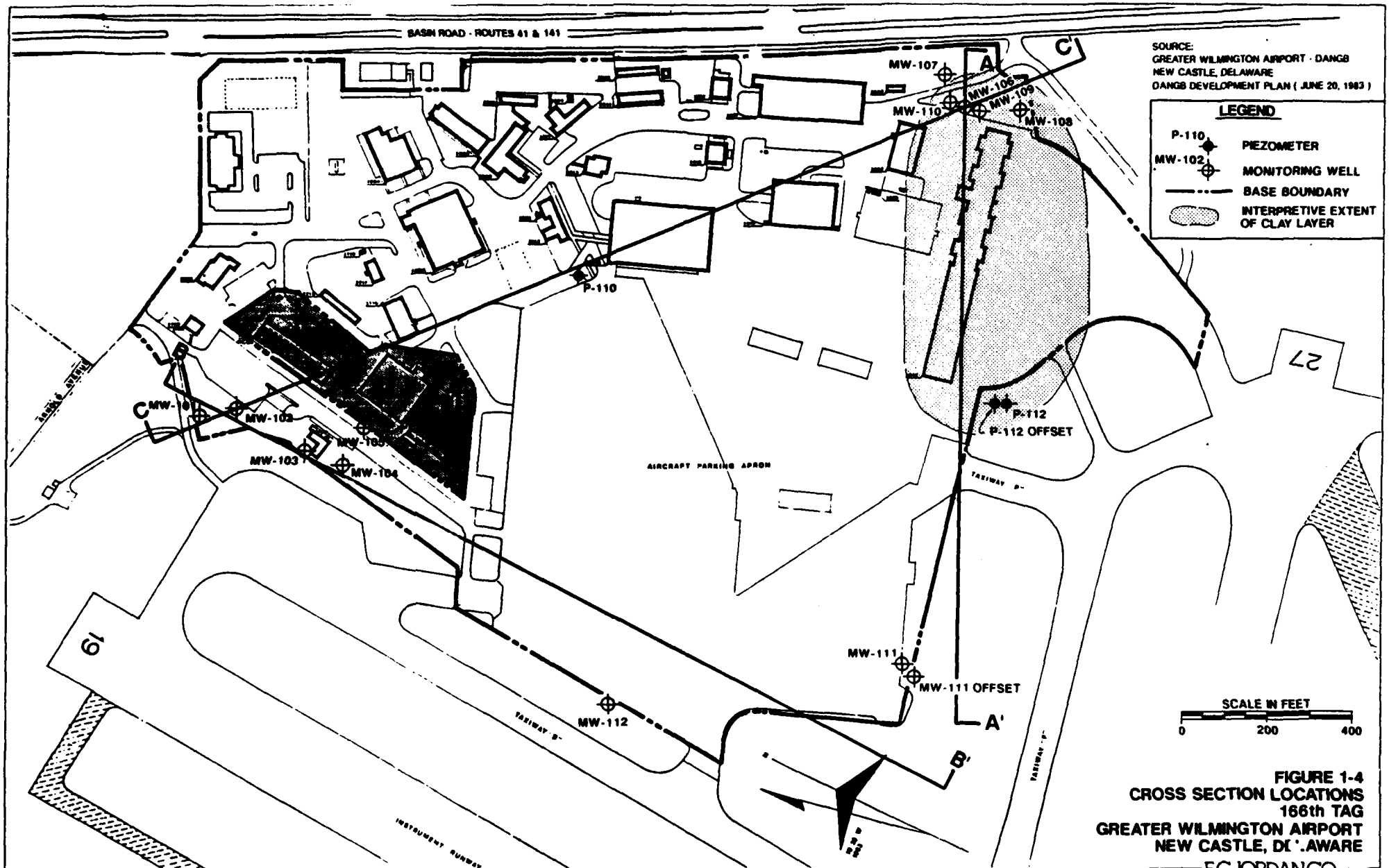

FIGURE 1-4
CROSS SECTION LOCATIONS
166th TAG
GREATER WILMINGTON AIRPORT
NEW CASTLE, DE'.AWARE

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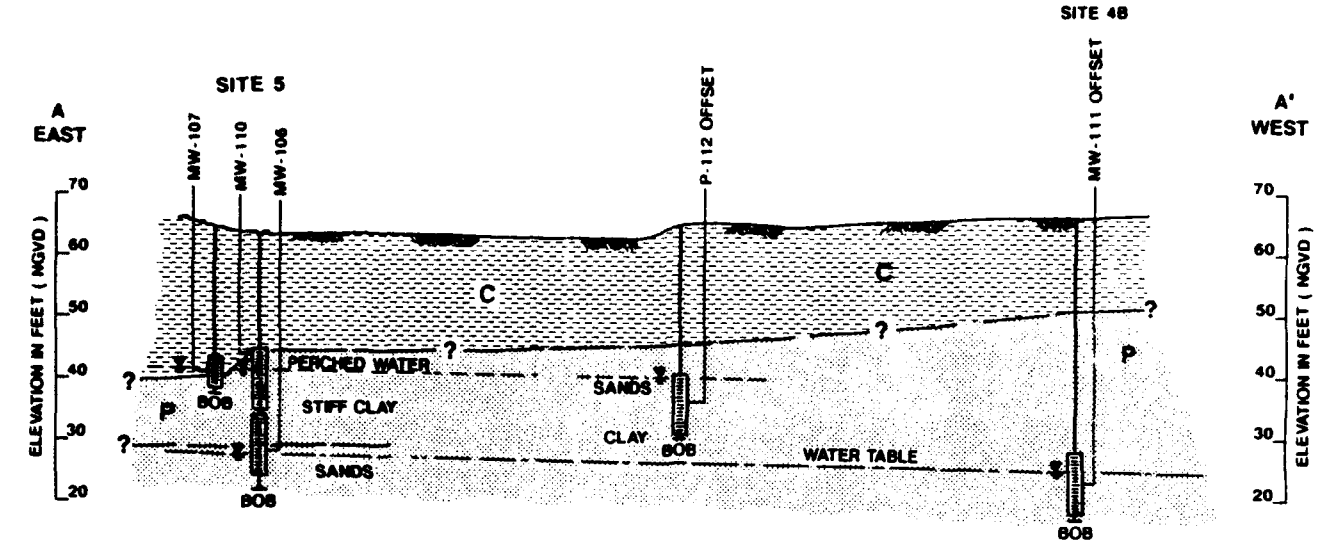


GEOLOGIC PROFILE A-A'

1"= 200'
VERTICAL EXAGGERATION
10:1

GEOLOGIC DESCRIPTION:

C COLUMBIA FORMATION
POORLY SORTED FLUVIAL SANDS
WITH SOME GRAVELS, SILTS, AND CLAYS.

P POTOMAC FORMATION
FLUVIAL CLAYS, SILTS, AND
SOME INTERBEDDED SANDS.

NOTES:

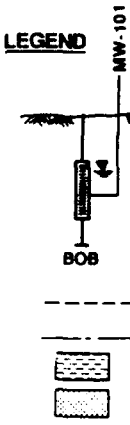
1. SEE FIGURE 1-3 FOR LOCATION AND ORIENTATION OF PROFILE.

2. EXPLORATIONS OFFSET FROM PROFILE A-A' ;
   MW-107 45 FEET NORTH
   MW-110 10 FEET NORTH
   MW-111 OFFSET 100 FEET SOUTH
   MW-111 OFFSET 100 FEET NORTH

3. PROFILES ARE BASED ON AN INTERPRETATION OF AVAILABLE SUBSURFACE EXPLORATIONS. ACTUAL CONDITIONS BETWEEN EXPLORATIONS MAY VARY FROM THOSE SHOWN.

4. MW-106 AND MW-110 ARE SEPARATE MONITORING WELLS.

LEGEND

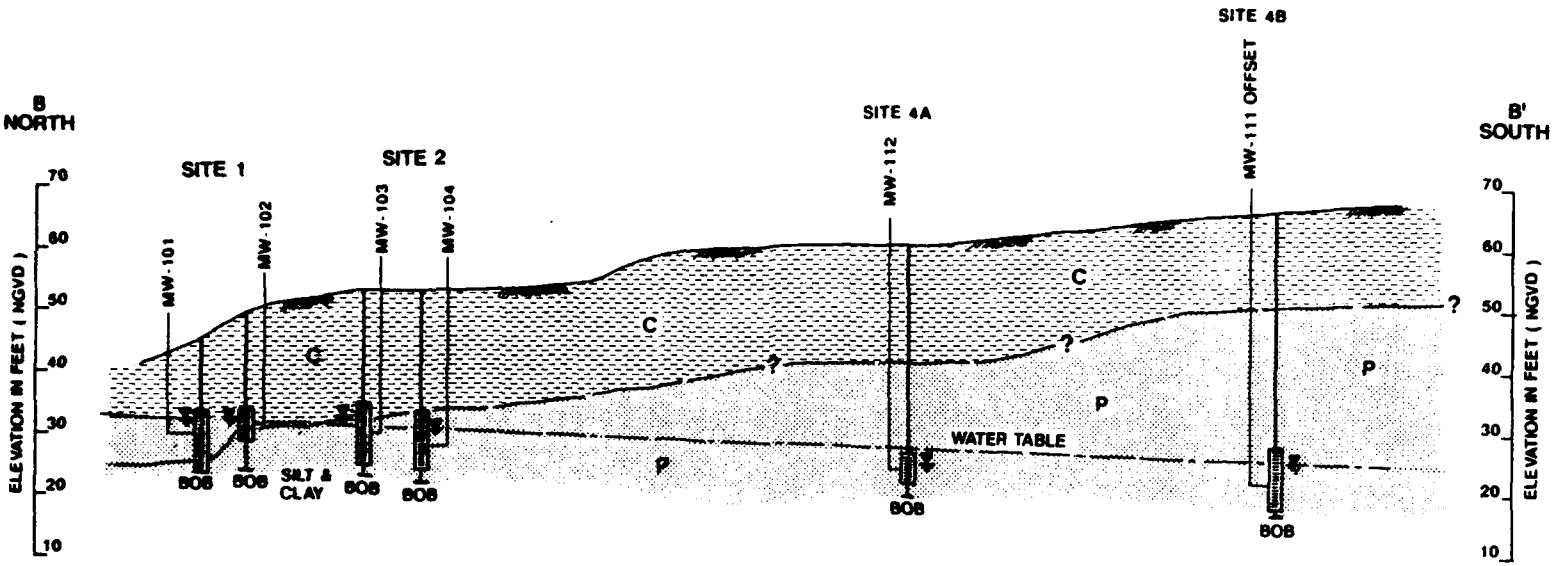


MONITORING WELL LOCATION
GROUND SURFACE
OBSERVED WATER LEVEL (FEET, NGVD)
OCTOBER 14, 1988
WELL SCREEN
BOTTOM OF BORING
PERCHED WATER
WATER TABLE
COLUMBIA FORMATION
POTOMAC FORMATION

FIGURE 1-5
INTERPRETIVE GEOLOGIC PROFILE A-A'
166th TAG
GREATER WILMINGTON AIRPORT
NEW CASTLE, DELAWARE

E.C.JORDAN CO.

5411-03



GEOLOGIC PROFILE B-B'

1"= 200'
VERTICAL EXAGGERATION
10:1

GEOLOGIC DESCRIPTION:

C COLUMBIA FORMATION
POORLY SORTED FLUVIAL SANDS WITH SOME GRAVELS, SILTS, AND CLAYS.

P POTOMAC FORMATION
FLUVIAL CLAYS, SILTS, AND SOME INTERBEDDED SANDS.

NOTES:

1. SEE FIGURE 1-3 FOR LOCATION AND ORIENTATION OF PROFILE.
2. EXPLORATIONS OFFSET FROM PROFILE B-B':
   MW-101 30 FEET WEST
   MW-102 25 FEET EAST
   MW-104 15 FEET EAST
   MW-112 185 FEET WEST
   MW-111 OFFSET 195 FEET EAST
3. PROFILES ARE BASED ON AN INTERPRETATION OF AVAILABLE SUBSURFACE EXPLORATIONS. ACTUAL CONDITIONS BETWEEN EXPLORATIONS MAY VARY FROM THOSE SHOWN.

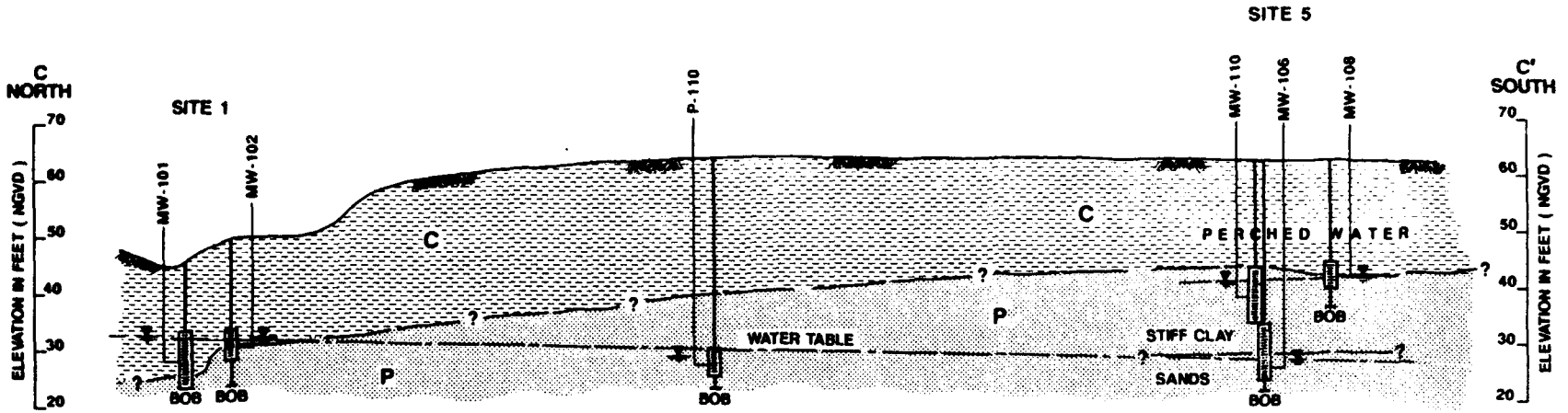
LEGEND

MW-101 MONITORING WELL LOCATION
GROUND SURFACE
OBSERVED WATER LEVEL (FEET, NGVD) OCTOBER 14, 1988
WELL SCREEN
BOB BOTTOM OF BORING
WATER TABLE
COLUMBIA FORMATION
POTOMAC FORMATION

FIGURE 1-6
INTERPRETIVE GEOLOGIC PROFILE B-B'
166th TAG
GREATER WILMINGTON AIRPORT
NEW CASTLE, DELAWARE

E.C.JORDAN CO.

5411-89



GEOLOGIC PROFILE C-C'

1"= 200'
VERTICAL EXAGGERATION
10:1

GEOLOGIC DESCRIPTION:

C COLUMBIA FORMATION
POORLY SORTED FLUVIAL SANDS
WITH SOME GRAVELS, SILTS, AND CLAYS.

P POTOMAC FORMATION
FLUVIAL CLAYS, SILTS, AND
SOME INTERBEDDED SANDS.

NOTES:

1. SEE FIGURE 1-3 FOR LOCATION AND ORIENTATION OF PROFILE.
2. EXPLORATIONS OFFSET FROM PROFILE C-C'
   MW-101 15 FEET EAST
   P-110 10 FEET WEST
   MW-108 60 FEET WEST
3. PROFILES ARE BASED ON AN INTERPRETATION OF AVAILABLE SUBSURFACE EXPLORATIONS. ACTUAL CONDITIONS BETWEEN EXPLORATIONS MAY VARY FROM THOSE SHOWN.

LEGEND

MW-101 MONITORING WELL LOCATION
GROUND SURFACE
OBSERVED WATER LEVEL (FEET, NGVD)
OCTOBER 14, 1988
WELL SCREEN
BOB BOTTOM OF BORING
PERCHED WATER
WATER TABLE
COLUMBIA FORMATION
POTOMAC FORMATION

FIGURE 1-7
INTERPRETIVE GEOLOGIC PROFILE C-C'
166th TAG
GREATER WILMINGTON AIRPORT
NEW CASTLE, DELAWARE

E.C.JORDAN CO.

5411-03

the presence of the distinguishing colors was used to differentiate between the two units at the Base.

The Columbia Formation was found to generally consist of well-graded brown, orange, and olive-colored stratified sands and silt, with some gravel. Individual lenses within the formation are sometimes poorly graded, with occasional clay and silt lenses. Thickness of the Columbia Formation was found to be consistent throughout the study area, as shown in Figures 1-5 through 1-7, with a maximum observed thickness of 24 feet (MW-107 and P-110). The observed thickness in the southern portion of the Base is consistent with estimated values (Woodruff and Thompson, 1975). In the northern portion of the Base the Columbia Formation is approximately 15 to 20 feet thick, and is not thin to absent as predicted by Woodruff and Thompson (1975).

The Potomac Formation also showed variability in texture and color. At Site 5, the upper portion of the Potomac Formation is a thick variegated red, gray, purple, and white silt and clay, with a trace of fine sand. The unit is stiff, dry to damp, and may act as an effective barrier to downward percolation of groundwater. The clay layer was also observed at P-112. The stiff clay at the top of the Potomac Formation is not observed at Sites 1, 2, and 4. The Potomac Formation at these sites the unit is a bluish-gray very fine silty sand, which may represent the upper sandy zone (Woodruff, 1981).

Since the clay layer observed between the two units at Site 5 and at P-112 is not present at Sites 1, 2, 4A, 4B, or at the other basewide locations, the contact between the two formations at these locations is not easily observed. The boundary is interpreted by considering the lack of gravel and the previously discussed color change criteria.

1.6 HYDROGEOLOGIC CHARACTERIZATION

This section is divided into two parts: a review of the regional hydrogeologic information and a summary of site-specific hydrogeologic conditions encountered during the investigation. The regional discussion is based on material from previous reports, published geologic literature, and field observations. The site-specific information is based on data collected from explorations described in Section 3.0.

1.6.1 Regional Hydrogeology

Sandy zones within both the Columbia and Potomac formations serve as sources (i.e., aquifers) of public drinking water (Woodruff, 1981). Several wellfields tapping the Potomac Formation in the area surrounding GWA to the south and east have been used for many years.

A shallow water table lies within the Columbia Formation and is believed to nearly parallel the general topographic surface. Because the Columbia Formation is variable in thickness (i.e., from 10 to 40 feet), the water table aquifer may also occur in the upper portions of the Potomac Formation (Woodruff, 1981). The effects of supply pumping on the elevation of the water table are not known, but are probably insignificant. Therefore, shallow

unconfined groundwater is assumed to move in topographically downslope directions.

The saturated zone of the Columbia Formation (i.e., the water table aquifer) serves as an important regional source of recharge to the underlying Potomac aquifer via vertical leakage. In addition, the proximity of the Potomac Formation to the land surface in the Base area and the local elevation place the Base in the direct recharge area for the upper sands of the Potomac Formation (Woodruff, 1984).

Approximately 8.5 million gallons per day of groundwater is pumped from nine wellfields tapping the Coastal Plain formations at Wilmington (Woodruff, 1984). In the GWA area, pumping is largely from upper Potomac sands. Approximately half of the areal pumpage is derived from local recharge areas; the remainder comes from expanding cones of depression (Woodruff, 1984). The regional groundwater flow in the Potomac Formation is eastward; however, the effects of pumping may locally perturb this relationship. Details appear to be lacking; however, potentiometric drawdown within these depressions has reached below sea level, which can cause important changes in the areal groundwater flow pattern. Woodruff implies that water levels in wells tapping the Potomac Formation normally fluctuate substantially in response to varying rates of wellfield pumping (Woodruff, 1984).

Adjacent to the Base along Route 141, two wells, approximately 200 feet deep and owned by the Artesian Water Company, are seasonally pumped to supplement public supply from other wellfields. A third deep well (i.e., Airport No. 1), also along Route 141, is located on the Base near Building 2823 (see Figure 1-8). Due to reported drawdown interference, this well has not been used in recent years. No other water supply or monitoring wells (except those installed by Jordan) exist on the Base property.

1.6.2 Base Hydrogeology

Interpretation of the Base hydrogeology is based on water level measurements taken during the SI field program. Results of the interpretation of these measurements for the water table aquifer are presented in a basewide water level contour map (Figure 1-8). Water levels obtained November 14, 1988, were used to generate the contour map. Water level data are tabulated in Appendix A.

Data shown in Figures 1-5, 1-6, and 1-7 demonstrate the occurrence of at least two distinct aquifer systems at the Base. At Site 5, MW-106 was drilled through the Columbia into the Potomac Formation. At the top of the Potomac Formation, a thick silt and clay zone acts as a local aquitard, and produces a locally perched water table. The perched water table is illustrated by the water levels in monitoring wells MW-107, MW-108, MW-109, and MW-110. The lower elevation of the water level in the deeper monitoring well (MW-106) is established below the aquitard, and defines the water table aquifer. The perched water table is also observed at P-112; however, it is not observed in the remaining exploration sites.

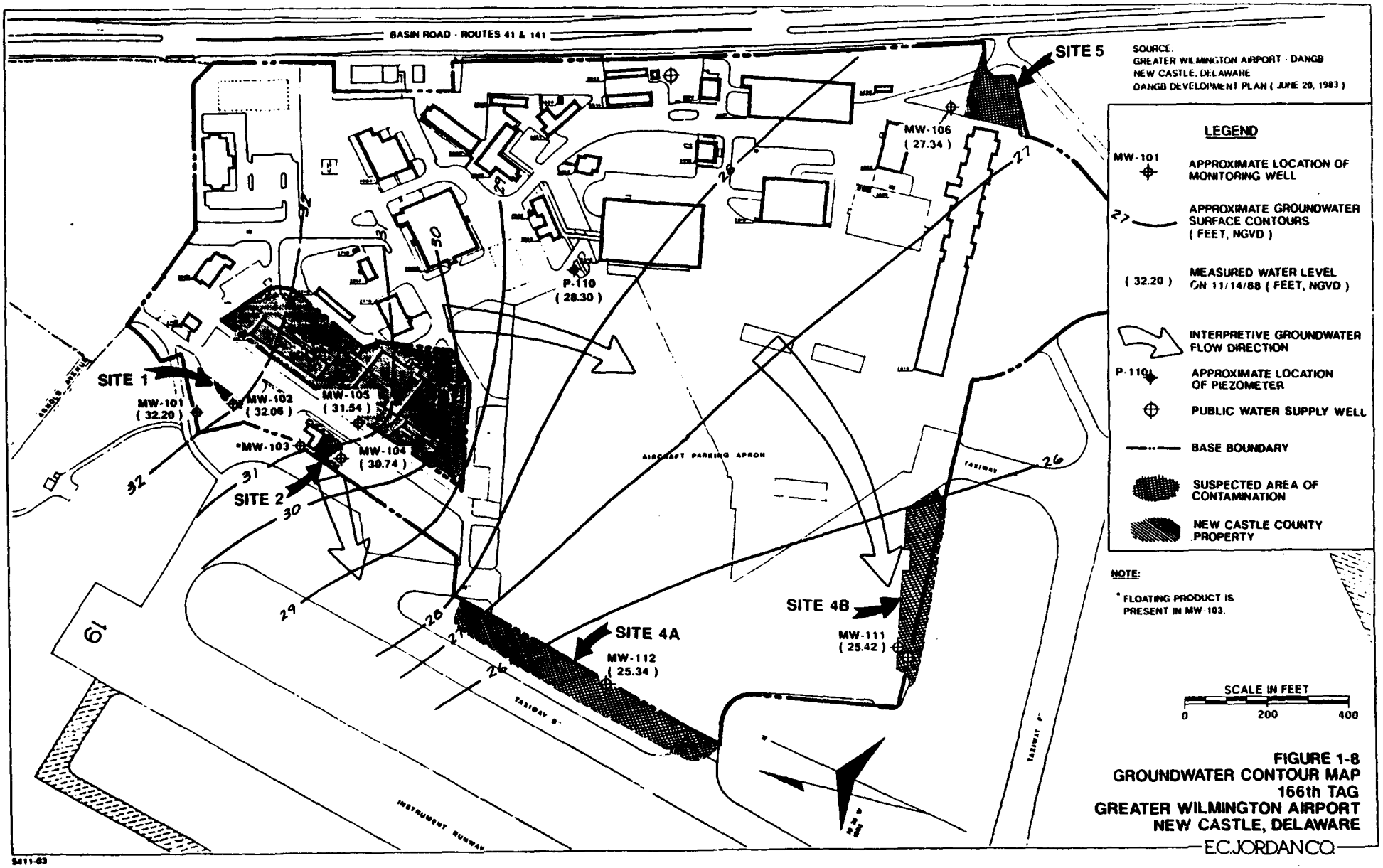


FIGURE 1-8
GROUNDWATER CONTOUR MAP
166th TAG
GREATER WILMINGTON AIRPORT
NEW CASTLE, DELAWARE

E.C.JORDAN CO.

The groundwater flow direction in the perched water table in the Site 5 vicinity is not clear. Water levels in the perched water table vary, making prediction of flow direction difficult. More definitive information on groundwater flow in the perched water table will be developed in the RI. Hydraulic conductivities of the screened intervals for the monitoring wells at Site 5 have values in the range of $4x10^{-3}$ to $4x10^{-4}$ inches per second (in/sec) (10^{-2} to 10^{-3} centimeters per second [cm/sec]). The existing data are inadequate to definitively indicate the areal extent of the perched system, but the estimated extent of the clay layer is shown in Figure 1-4.

Locally, perched water resides above the water table aquifer, and potentially serves to recharge the deeper water table aquifer. The integrity of the aquitard in the Site 5 vicinity is unknown. The deep monitoring well at Site 5 (MW-106) and all other monitoring wells and piezometers are interpreted to be screened in the more extensive water table aquifer (see Figures 1-5, 1-6, and 1-7). This deeper, broader aquifer shows a southwestward direction of movement, with gradients ranging from 0.001 to 0.003 ft/ft (see Figure 1-7). Using an assumed porosity of 0.3, the $4x10^{-3}$ to $4x10^{-4}$ in/sec (10^{-2} to 10^{-3} cm/sec) range of hydraulic conductivity gives flow velocities ranging from 0.009 to 0.28 ft/day (3 to 102 ft/yr).

At Sites 1 and 2, five soil borings and monitoring wells were installed. Clay layers that gave rise to perched water above the water table aquifer at Site 5 are absent at Sites 1 and 2. On this northern end of the Base there is no distinct contact between the two formations; the Potomac Formation has an upper sand zone directly overlain by sands and silty sands of the Columbia Formation. The water table aquifer occurs in these Potomac sands at Sites 1 and 2.

The inferred flow direction at Sites 1 and 2 is southwest (see Figure 1-8). This direction is roughly the same as groundwater movement predicted from the deeper wells within the Potomac Formation (P-110, MW-111, and MW-112) (see Figures 1-5, 1-6, and 1-8). Hydraulic conductivities at Sites 1 and 2 are in the $4x10^{-3}$ in/sec (10^{-2} cm/sec) range, with local gradients of 0.01 ft/ft. Using an assumed porosity of 0.3 for the sediments, the groundwater flow velocity in the Sites 1 and 2 area was calculated at 0.95 ft/day (i.e., 345 ft/yr).

The potentiometric heads for wells at Sites 1 and 2 are much higher than the basewide pressure head within the Potomac Formation, suggesting that Sites 1 and 2 are in a recharge area. The higher piezometric heads may also be related to either the large paved area above the piezometers, which act to minimize local vertical recharge, or the focusing of surface drainage recharge in the NDD at Sites 1 and 2, which could artificially mound the groundwater.

2.0 FIELD EXPLORATION PROGRAM

To confirm or refute the existence of suspected environmental contamination at the Base, Jordan conducted field investigations. The field program ran from September 27 to November 8, 1988. These investigations focused mainly on source characterization; however, a limited study of groundwater movement was included. Section 2.0 describes field methods used during the SI at the Base, program changes, and problems encountered during the field program.

2.1 SOIL ORGANIC VAPOR SURVEY

The SOV survey, conducted at three of the Base sites (Sites 1, 2, and 5), located previous source areas and optimized soil boring and monitoring well locations. The SOV survey was conducted by Tracer Research Corporation (TRC) of Tucson, Arizona, using methodology described in this subsection.

At each SOV sampling point, a 1-inch outside diameter (OD), hollow steel probe was driven into unsaturated soil to depths between 3 and 7 feet. A vacuum pump, attached to the end of the steel probe, was used to withdraw gas from the soil pore space. The gas was collected in a syringe and analyzed on-site using a gas chromatograph (GC) equipped with an electron capture detector for chlorinated VOCs, and a flame ionization detector for nonchlorinated VOCs. GC calibration standards for tetrachloroethene (PCE), trichloroethene (TCE), trichloroethane (TCA), and benzene, toluene, and xylene (BTX) were run to enable identification of these compounds during the survey. A Jordan geologist was present during the entire SOV survey program. The results of the SOV survey are shown in Subsection 3.1.

The SOV survey at Site 1 focused on a grassy area adjacent to the parking area for the fuel tank trucks and in the drainage area of the NDD. A total of 18 sampling points, located on a 30-foot grid, was sampled at Site 1 (see Figure 3-1).

At Site 2, the SOV survey was concentrated in the area adjacent to the five 50,000-gallon underground storage tanks (USTs) associated with the POL building, and in the area impacted by the past AVGAS spill (see Figure 3-2). A total of 14 sampling points, spaced at 20-foot intervals, was sampled in the southern, western, and northern sides of the POL pumphouse facility.

The SOV survey at Site 5 totaled 20 sampling points along the region where the SDD was originally exposed (see Figure 3-3). Sixteen points were located on a 50-foot grid, extending from the southeastern corner of the base to the southern end of Building No. 2821. Four additional SOV points (SG-10, SG-11, SG-12, and SG-20) were located around SG-8, where high levels of total petroleum hydrocarbons (PHCs) were detected.

2.2 SOIL BORINGS

A total of 16 soil borings was completed during the SI field program. Thirteen borings are site-related and three provide basewide geologic control locations. Monitoring wells were installed in the site-related soil borings and piezometers were installed in the other basewide control locations. The soil borings and monitoring wells were installed by John Mathes and Associates, Inc. (Mathes), and all borings were advanced with a 4.25-inch inside diameter (ID), hollow-stem auger.

A total of two soil borings were installed at Site 1, with boring depths of 22 feet (MW-101) and 26 feet (MW-102). At Site 2, three soil borings (MW-103, MW-104, and MW-105) were drilled, and the boring depths were all approximately 30 feet. One soil boring was installed at Site 4A (MW-112) and two were drilled at Site 4B (MW-111 and MW-111 offset). The boring depths at Sites 4A and 4B ranged from 41 to 49 feet deep. Five soil borings were installed at Site 5 (MW-106, MW-107, MW-108, MW-109, and MW-110), and the boring depths ranged from 22 to 41 feet. Soil boring locations for Sites 1, 2, 4A, 4B, and 5 are shown in Figures 3-4 through 3-7.

Three soil borings were also installed at two basewide locations (P-110 and P-112/P-112 offset) ranging from 34 to 41 feet deep (see Figure 1-4).

2.3 SUBSURFACE SOIL SAMPLING

Subsurface soil samples from the borings were collected using 2-foot-long, split-spoon samplers at 5-foot and continuous intervals; analytical soil samples were taken from nine of the borings. Soil samples were screened for VOCs with a photoionization (PI) meter immediately after the split-spoon sampler was opened. Samples were also screened using a field GC. The PI meter and GC field-screening results were used to select samples for laboratory analysis. A Jordan geologist was present during the soil boring program; boring logs are in Appendix B. Drill cuttings from soil borings associated with high GC or PI meter readings were contained in 55-gallon drums. Cuttings were contained from MW-103, MW-104, MW-108, MW-111 Offset, and MW-111.

2.4 SURFACE SOIL SAMPLING

Surface soil samples were collected from six locations at Sites 1 and 2, and were distinct from the soil boring locations (see Figures 3-4 and 3-5). Samples were screened for VOCs with a PI meter immediately after the ground surface was broken, and VOC samples were taken. Using a spade, two or three samples from a 3-foot circular area were composited laterally and SVOC, total PHC, and lead samples were taken.

2.5 MONITORING WELL AND PIEZOMETER INSTALLATION

Monitoring wells and piezometers were constructed identically consisting of 2-inch ID, flush-jointed Schedule 40 polyvinyl chloride (PVC), with 0.01-inch

slot PVC screens. Each monitoring well or piezometer consists of a 5- or 10-foot screened interval at the bottom of the boring. Well screens were placed with approximately 2 feet of the screen in the vadose zone. A sufficient amount of 2-inch ID flush-jointed riser was added above the screen to reach approximately 2 feet above ground surface. A vented, plastic cap was installed on each monitoring well and piezometer (see Appendix B). The monitoring wells and piezometers are constructed identically; however, the two installations are distinct in their planned uses. Monitoring wells are planned to be sampled; piezometers are designed to provide hydrogeologic information only, without sampling.

Before installation, each borehole was advanced and/or backfilled to the desired installation depth. Monitoring wells and piezometers were installed through 4.25-inch ID, hollow-stem augers. Clean silica sand was used as backfill around the screened portion of the well. The sandpack was extended a minimum of 2 feet above the top of the screen, and a 3-foot bentonite pellet seal was placed above the sandpack. During installation operations, the augers were withdrawn in small increments to avoid disturbing the sandpack and exposing the borehole sides above the backfill. Above the bentonite seal, the borehole was backfilled with cement-bentonite grout to the ground surface. Metal protective casings were cemented in place, and the wells and piezometers were locked with brass, keyed-alike locks.

After the installations were completed, monitoring wells and piezometers were developed. Well development was accomplished by continuously pumping the well for 2 to 3 hours, or until the discharge was visually clean. Development water from monitoring wells and piezometers with high PI meter readings was contained in 55-gallon drums. Monitoring wells and piezometers in which development water was contained include MW-101, MW-103, MW-104, MW-105, MW-106, MW-107, MW-108, MW-109, MW-110, MW-111, MW-111 offset, MW-112, P-112, and P-112 offset.

At the completion of field activities, a ground survey of monitoring wells and piezometers was conducted by J.M. Stewart, Inc. (Stewart), of Philadelphia, Pennsylvania. The vertical datum is NGVD 1929 and the horizontal datum is the Delaware Plane Coordinates 1983 adjustment. Both horizontal and vertical control originated from the NOAA monument, Hare 2. Well elevations, ground surface elevations, and horizontal locations were determined to the nearest 0.01, 0.01, and 0.1 foot, respectively. Ground survey data are presented in Appendix A.

2.6 AQUIFER TESTING

Rising-head permeability tests were performed on monitoring wells and piezometers to estimate hydraulic conductivity of the aquifer at each location. To perform this test, the water in the well was instantly depressed; recovery to static level was accurately monitored through measurements made logarithmically with time. The water table recovery was monitored by an In-situ Hermit Data Logger with a 20-pounds-per-square-inch pressure transducer.

The test apparatus operated as follows. First, the pressure transducer was emplaced and initialized. A 3-foot-long, 1-inch OD slug was then lowered to a

minimum of 6 inches above the transducer, and the well was allowed to equilibrate. The slug was removed, depressing the water level, and the water table recovery was monitored by the data logger. Two rising-head tests were performed on each monitoring well and piezometer. Data collected from the rising-head tests were analyzed by the Hvorslev method (Hvorslev, 1951). Plots of these data and a sample calculation to determine hydraulic conductivity are included in Appendix D. The tabulated hydraulic conductivity values represent an average of the two tests at each monitoring well or piezometer.

2.7 GROUNDWATER SAMPLING

A single round of groundwater samples was collected from all newly installed monitoring wells to characterize the extent and type of contaminants present in the groundwater in the water table aquifer (see Subsection 3.3 for site-by-site discussion of groundwater analytical data). Groundwater samples were labeled, preserved, and shipped to CompuChem Laboratories, Inc. (CompuChem), for VOC, SVOC, total PHC, and lead analysis. Chain-of-custody procedures and Quality Assurance Project Plan (QAPP) requirements were followed. Sampling purge water from monitoring wells and piezometers with high PI meter readings was contained in 55-gallon drums along with the development water.

2.8 DISPOSAL OF WASTES

Based on field PI meter measurements, various of waste materials were contained during the SI field program. Five soil borings had soil cuttings contained (see Subsection 2.2), and developing and purge water from 14 monitoring wells and piezometers was contained (see Subsections 2.5 and 2.7). The soil and water waste materials were analyzed for parameters indicated by the Delaware Department of Natural Resources and Environmental Control (DNREC), including Target Compound List (TCL) VOCs and SVOCs, Priority Pollutant inorganics, TCL pesticides and PCBs, and Resource Conservation and Recovery Act (RCRA) characteristics tests. Results from the laboratory analysis were submitted to the DNREC along with proposed methods of disposal. Following discussions with the DNREC and New Castle County Department of Public Works, soil cuttings from MW-103 was disposed at the State of Delaware Solid Waste Landfill and all other soils were disposed on-base. Wastewater was disposed into the New Castle County water treatment system, using sewer lines located on-base.

2.9 ANALYTICAL PROGRAM

Using Contract Laboratory Program (CLP) protocols with full data validation (except for PHCs), VOCs, SVOCs, total PHCs, and lead were analyzed on the six surface soil composites, the 23 selected subsurface soil samples, and the 14 groundwater samples by CompuChem. Methodology is described in Subsection 3.2. All chain-of-custody procedures and QAPP requirements were followed. Portions of all samples were placed in jars designated for VOC field-screening, and drillers' jars (test boring samples only) for reference purposes. Sieve analyses of selected test boring samples are in Appendix C.

2.10 SI PROGRAM CHANGES AND FIELD PROBLEMS

Eight monitoring wells at three sites (Sites 1, 2, and 5) and four basewide piezometers were initially planned for the SI program (E.C. Jordan Co., 1988). During the installation of basewide piezometers in the Site 4 vicinity, field screening results indicated the presence of contamination. Since Site 4 had been previously identified as a potential hazardous waste site, monitoring wells were installed and the two basewide locations in the Site 4 vicinity were designated Sites 4A and 4B (see Section 1.0). At Site 5, perched water was encountered above the water table aquifer. To monitor this perched water and also evaluate the deeper water table aquifer (MW-106), an additional monitoring well (MW-109) was installed and screened in the perched water.

Initially, only the monitoring wells at Sites 1, 2, and 5 were to be sampled. However, field-screening results of soils from two of four basewide locations (Site 4A [MW-112] and Site 4B [MW-111]) during the drilling effort indicated significant levels of contamination; therefore, groundwater was sampled at MW-111 and MW-112.

During well development, the drilling subcontractor (i.e., Mathes) potentially impacted two monitoring wells and one piezometer (MW-109, MW-111, and P-112). The monitoring wells and piezometers were developed using an air compressor for air-lifting water. Jordan geologists, upon periodic inspection of well development at MW-109, observed that the backup air filter on the air line was saturated with oil. A sheen of oil was also observed on top of contained well development water. Recognizing that other monitoring wells and piezometers may have been similarly impacted, Jordan personnel checked the contained developing water from monitoring wells and piezometers developed before MW-109. The sheen of oil on the contained developing water was observed on the P-112 and MW-111 water surface, the last two installations developed before MW-109. An oily sheen was not observed at MW-112, which was developed before P-112 and MW-111. The defective air compressor was replaced and the potentially contaminated wells were redeveloped to minimize contamination to groundwater.

In addition, the monitoring well and piezometers were replaced by Mathes. MW-110 replaced MW-109, and P-112 offset and MW-111 offset replaced P-112 and MW-111, respectively. MW-109 and MW-111 were sampled to evaluate the effects of oil on groundwater composition. These data are included in Appendix G. The resulting data between the two wells appears to be consistent and is included in this report for comparison purposes. In future work, only MW-111 offset will be used as the monitoring point. VOC and SVOC compounds in MW-109 and MW-110 also reflect no potential contamination from the development process. However, total PHCs were detected in MW-109 (8 parts per million [ppm]), which are probably related to oil from the air compressor. The monitoring well and piezometers (MW-109, P-112, and MW-111) contaminated during well development will be removed and the borings grouted according to DNREC regulations.

3.0 FIELD AND ANALYTICAL RESULTS

Section 3.0 includes a summary of investigations, field observations, and analytical sampling of soil and water samples. Subsection 3.1 presents the data compiled from the SOV surveys at Sites 1, 2, and 5. The data from soil samples obtained from test borings and surface sampling are presented in Subsection 3.2, and the groundwater analyses are summarized in Subsection 3.3.

3.1 SOIL ORGANIC VAPOR SURVEY DATA

The soil gas data are presented in Subsections 3.1.1 through 3.1.3. Total PHC and total halocarbons (i.e., the sum of PCE, TCE, and TCA) for each SOV sampling point are in Table 3-1. Elevated levels of total PHCs were found at Sites 2 and 5; Site 5 also had elevated levels of total halocarbons. Site 1 had only low values for total halocarbons and nondetect values for total PHC. Complete analytical results, methodology, equipment, analytical and quality assurance/quality control procedures, and the data report prepared by TRC are contained in Appendix E.

3.1.1 Site 1

A total of 18 sampling points was included in the SOV survey at Site 1 (Figure 3-1). Total PHC data show low levels across the whole site. Total halocarbon values were also low, with the highest values less than 1 microgram per liter (µg/ℓ).

3.1.2 Site 2

Fourteen SOV sampling points were located at Site 2 (Figure 3-2). Several points have high levels of total PHCs (1,800 to 58,000 µg/ℓ) and BTX. The SOV sampling points with these high values are located on the southwest (SG-57, SG-58, and SG-59) and northwest (SG-61, SG-62, SG-63, SG-64, and SG-67) sides of Building 2701 (see Table 3-1 and Figure 3-2). These high total PHCs and BTX values are indicative of elevated levels of subsurface fuel-related contamination. Several sampling points (SG-60, SG-65, and SG-66) adjacent to those with high total PHCs record low values of total PHC and BTX. The reason for these anomalously low readings are not clear; however, it may be related to subsurface permeability variations or construction details that inhibit mobility of SOVs. The total halocarbons for all SOV sampling points at Site 2 have values less than 0.50 µg/ℓ. Based on these results, soil borings and monitoring wells were located near the high values of total PHCs.

3.1.3 Site 5

The SOV survey at Site 5 totaled 20 sampling points, and the results indicate two areas of contamination (Figure 3-3). One area associated with SOV sampling points SG-8, SG-10, SG-11, SG-12, and SG-20, southeast of Building 2818, has total PHC values ranging from 760 to 8,000 µg/ℓ, but low halocarbons. The other SOV sampling points at Site 5 have low values for total PHCs in the vicinity of the fenced storage area.

TABLE 3-1
RESULTS OF SOV SURVEY

166th TAG SITE INSPECTION
NEW CASTLE, DELAWARE

	SAMPLE	TOTAL HALOCARBONS (µg/ℓ)	TOTAL PETROLEUM HYDROCARBONS (µg/ℓ)
SITE 1	SG-39	0.12	<0.1
	SG-40	0.08	<0.1
	SG-41	0.014	<0.1
	SG-42	0.012	
	SG-43	0.055	<0.1
	SG-44	0.63	<0.1
	SG-45	0.12	<0.1
	SG-46	0.3	<0.1
	SG-47	0.24	<0.1
	SG-48	0.1	<0.1
	SG-49	0.024	<0.1
	SG-50	0.096	<0.1
	SG-51	0.609	<0.1
	SG-52	0.16	<0.1
	SG-53	0.07	<0.1
	SG-54	0.058	<0.1
	SG-55	0.05	<0.1
	SG-56	0.08	<0.1
SITE 2	SG-57	0.2103	3,400
	SG-58	0.121	38,000
	SG-59	0.222	20,000
	SG-60	0.236	<0.1

TABLE 3-1
(continued)
RESULTS OF SOV SURVEY

166th TAG SITE INSPECTION
NEW CASTLE, DELAWARE

	SAMPLE	TOTAL HALOCARBONS (µg/ℓ)	TOTAL PETROLEUM HYDROCARBONS (µg/ℓ)
	SG-61	0.092	44,000
	SG-62	0.084	58,000
	SG-63	0.042	30,000
	SG-64	0.072	26,000
	SG-65	0.074	<0.1
	SG-66	0.0052	<0.1
	SG-67	0.009	1,800
	SG-68	0.0067	0.9
	SG-69	0.0058	<0.1
	SG-70	0.0051	2,400
SITE 5	SG-01	0.0244	<0.1
	SG-02	0.08	<0.1
	SG-03	0.042	<0.1
	SG-04	0.0033	<0.1
	SG-05	0.03	<0.1
	SG-06	0.18	<0.1
	SG-07	0.17	<0.1
	SG-08	0.324	760
	SG-09	0.33	<0.1
	SG-10	0.214	4,300
	SG-11	0.233	1,500
	SG-12	0.086	180
	SG-13	2.08	2
	SG-14	2.089	0.2
	SG-15	0.72	<0.1
	SG-16	0.184	<0.1
	SG-17	0.409	<0.1
	SG-18	3.09	<0.1
	SG-19	7.35	<0.1
	SG-20	0.1068	8,000

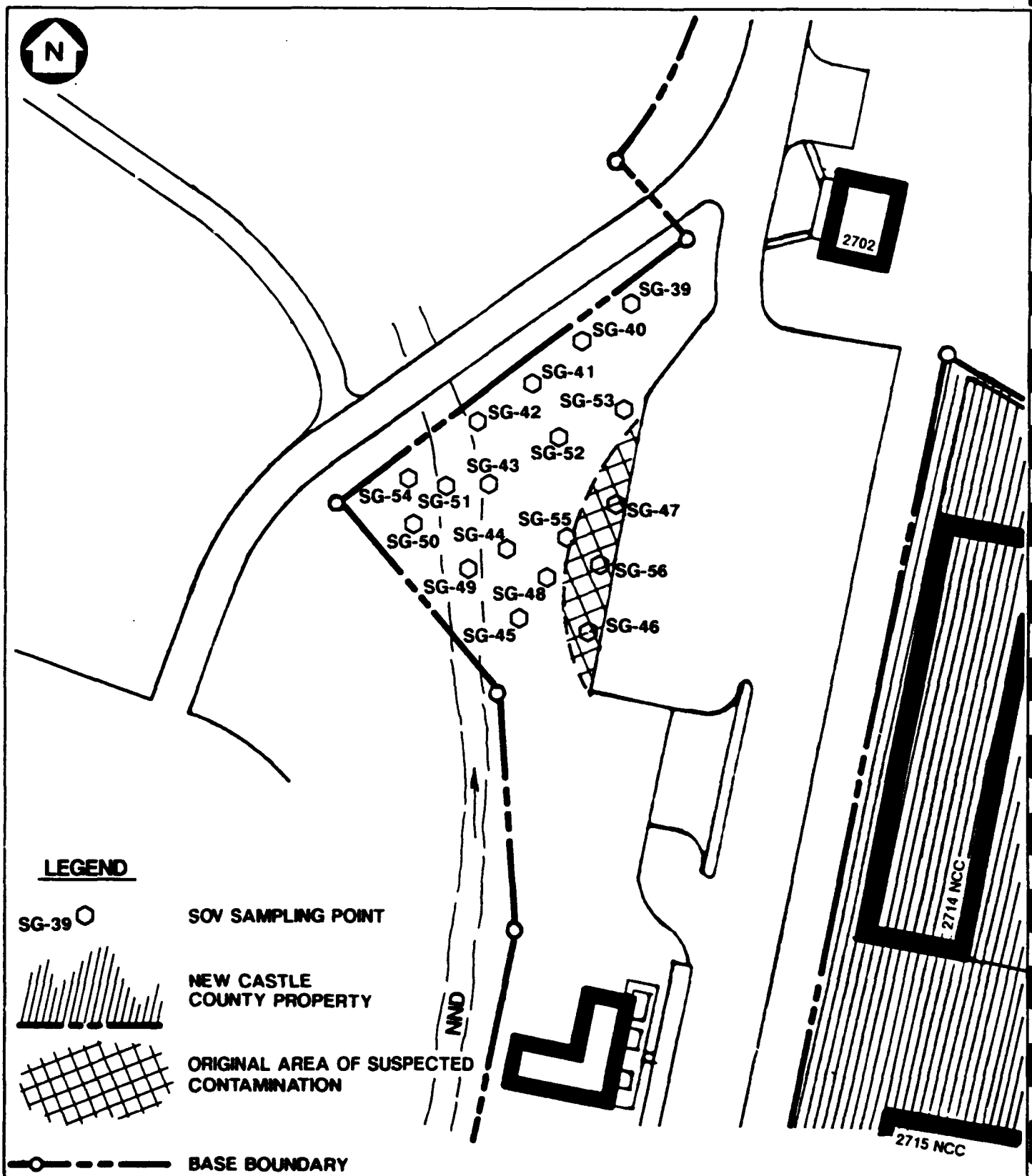


FIGURE 3-1
LOCATIONS OF SOV SAMPLING POINTS: SITE 1
166th TAG
GREATER WILMINGTON AIRPORT
NEW CASTLE, DELAWARE

E.C. JORDAN CO.

5411-03

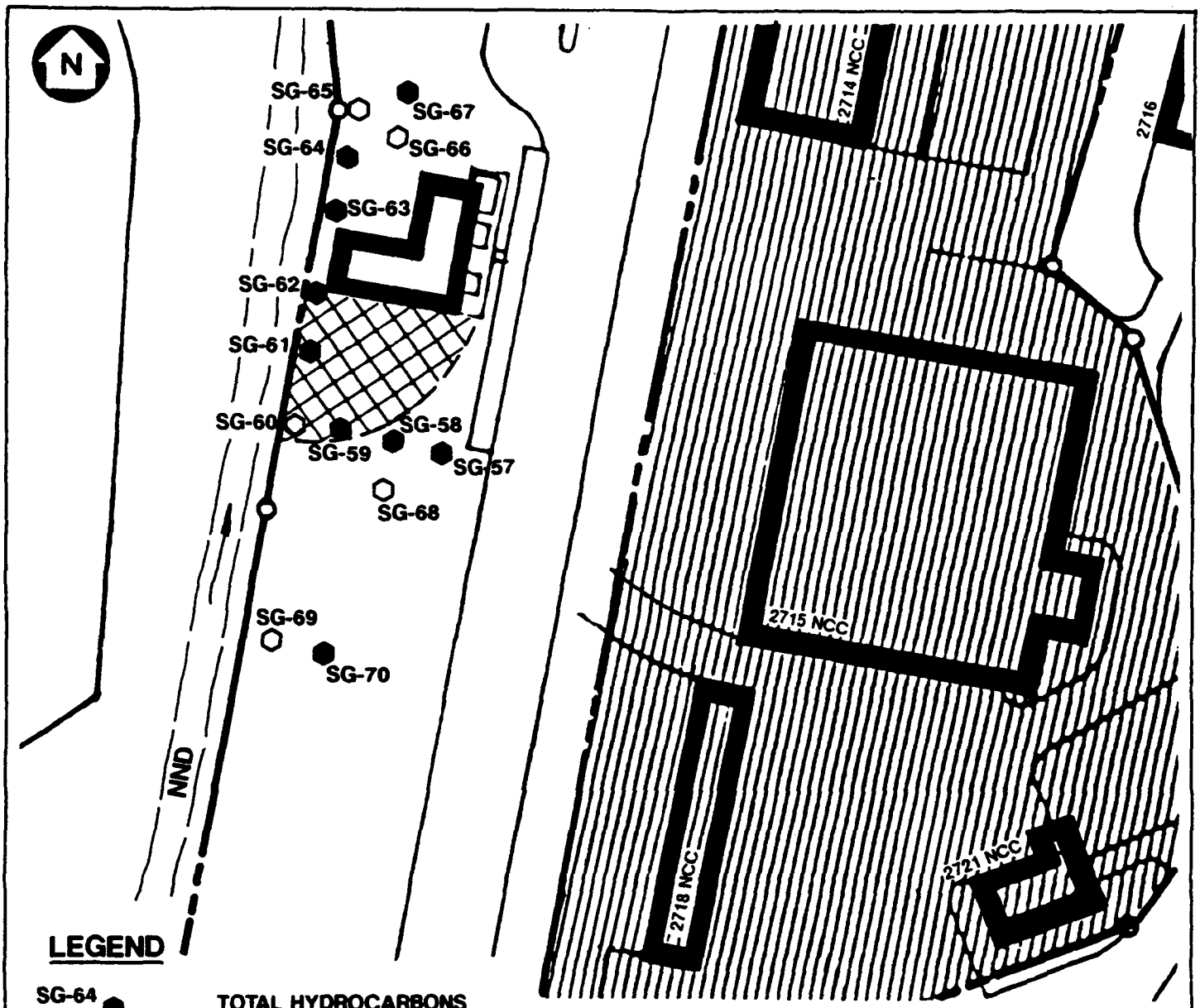


FIGURE 3-2
LOCATIONS OF SOV SAMPLING POINTS: SITE 2
166th TAG
GREATER WILMINGTON AIRPORT
NEW CASTLE, DELAWARE

EC JORDAN CO

5411-03

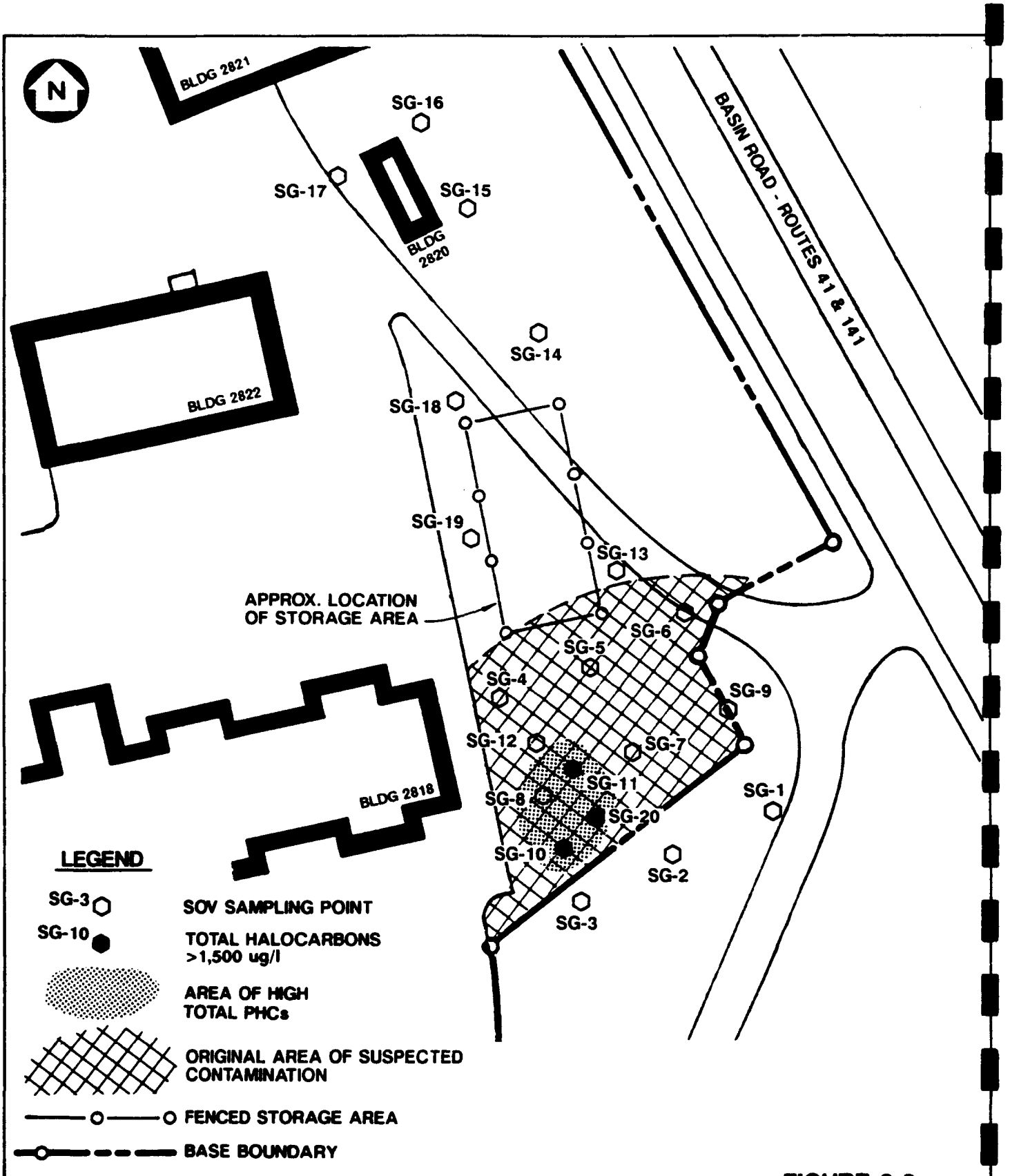


FIGURE 3-3
LOCATIONS OF SOV SAMPLING POINTS: SITE 5
166th TAG
GREATER WILMINGTON AIRPORT
NEW CASTLE, DELAWARE

E.C.JORDAN CO.

A second area of contamination illuminated by the SOV survey is located around a fenced storage compound south of Building 2825. SOV sampling points SG-13, SG-14, SG-18, and SG-19 have PCE levels ranging from 2 to 7 µg/ℓ. These values are greater than background values, indicating the potential for soil halocarbon contamination. Based on SOV survey results, monitoring wells were placed along the fenced storage area and adjacent to the anomalous total PHC SOV sampling points.

3.2 SOIL ANALYTICAL DATA

Soil data from soil borings and surface sampling points are summarized in Subsections 3.2.1 through 3.2.4. Twenty-nine soil samples were collected during the SI field program and analyzed for TCL VOC and SVOC compounds, lead, and total PHC. CLP methods were used for VOC, SVOC, and lead analysis, and U.S. Environmental Protection Agency (USEPA) Methods 3550/418.1 were used for PHC analysis. Duplicate analysis were performed on 10% of the samples and typically gave results in the acceptable range (see Appendix F). Background soil samples were not taken as part of the SI program. Contaminated soils were observed at Sites 1, 2, 4B, and 5.

3.2.1 Site 1

Eight soil samples and one duplicate were taken at Site 1 (i.e., three surface locations and five soil samples from two soil borings [MW-101 and MW-102]). Sampling locations and depths are shown in Figure 3-4. Surface soil sampling points SS-101 and SS-102 are located in the NDD, while SS-103 is situated adjacent to the fuel truck parking area (see Figure 3-4).

Analytical data (see Appendix F), demonstrate that TCL VOCs are absent from both surface and subsurface soil samples. SVOCs are also not observed in soil samples from soil borings; however, surface soil samples from the NDD (SS-101 and SS-102) contain abundant TCL SVOCs (see Figure 3-4). The SVOCs are a set of 11 polynuclear aromatic hydrocarbons (PAHs). A similar distribution was observed for total PHC and lead. Subsurface soils exhibit low values for lead (1 to 5 ppm) and no PHCs, while SS-101, SS-102, and SS-103 are associated with total PHCs of 150 to 400 ppm and lead values approximately 5 to 10 times that of background values. Bis(2-ethylhexyl)phthalate, detected in SS-103 (1,000 parts per billion [ppb]), is a common laboratory contaminant detected in the blank; therefore, it will not be considered further. The distribution of contamination and specific analytes present at Site 1 are shown in Figure 3-4.

3.2.2 Site 2

Ten soil samples and two duplicates were collected at Site 2. Three samples are from surface soil locations; the other seven are from soil borings (Figure 3-5).

Analytical data demonstrate the presence of contamination at several sampling locations (see Appendix F). The distribution of contamination, specific analytes present and sampling depths are represented in Figure 3-5. VOCs, observed in soils from MW-103, MW-104, and SS-105, include benzene,

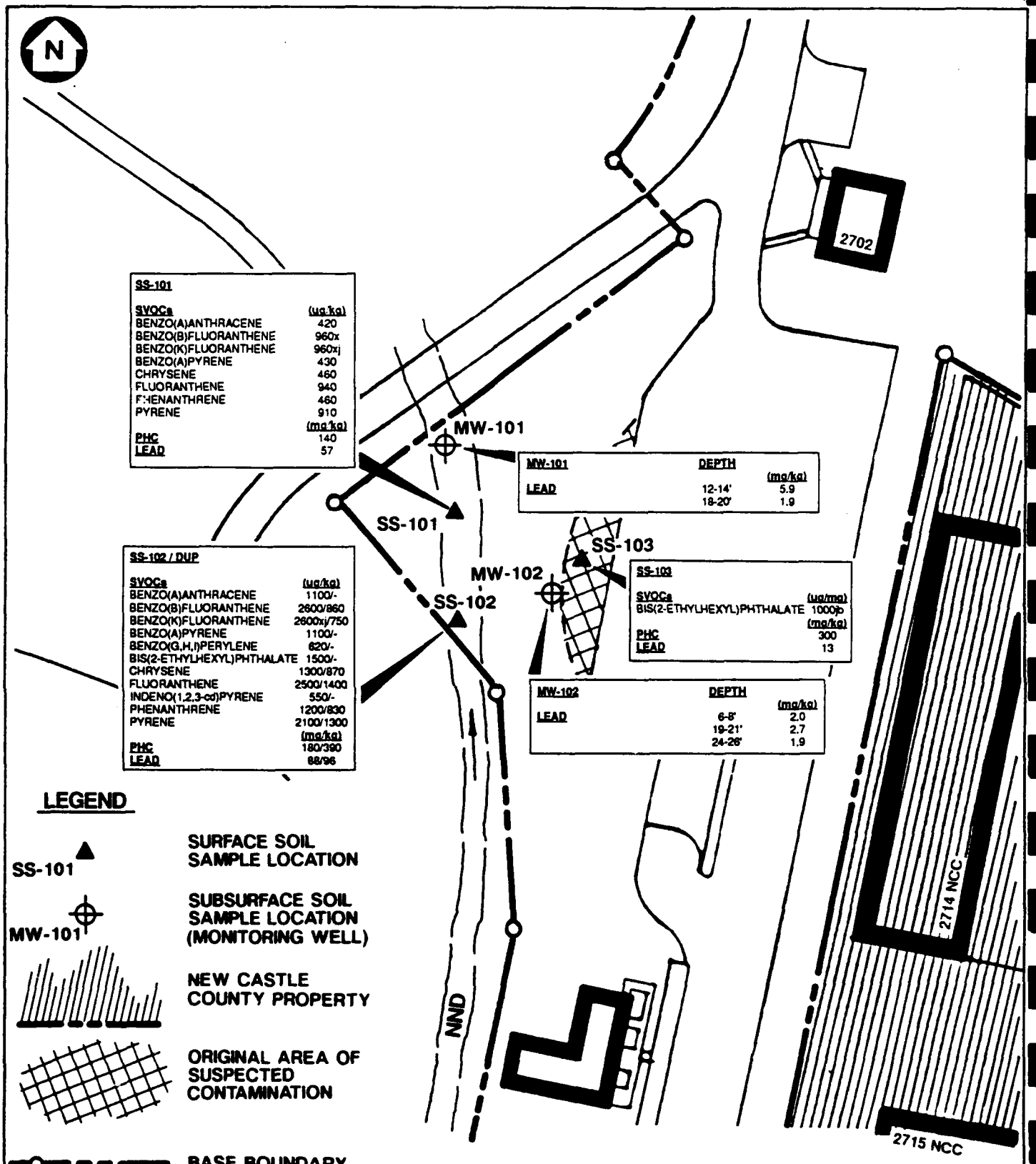


FIGURE 3-4
SOIL ANALYTICAL DATA MAP: SITE 1
166th TAG
GREATER WILMINGTON AIRPORT
NEW CASTLE, DELAWARE

E.C. JORDAN CO.

5411-03

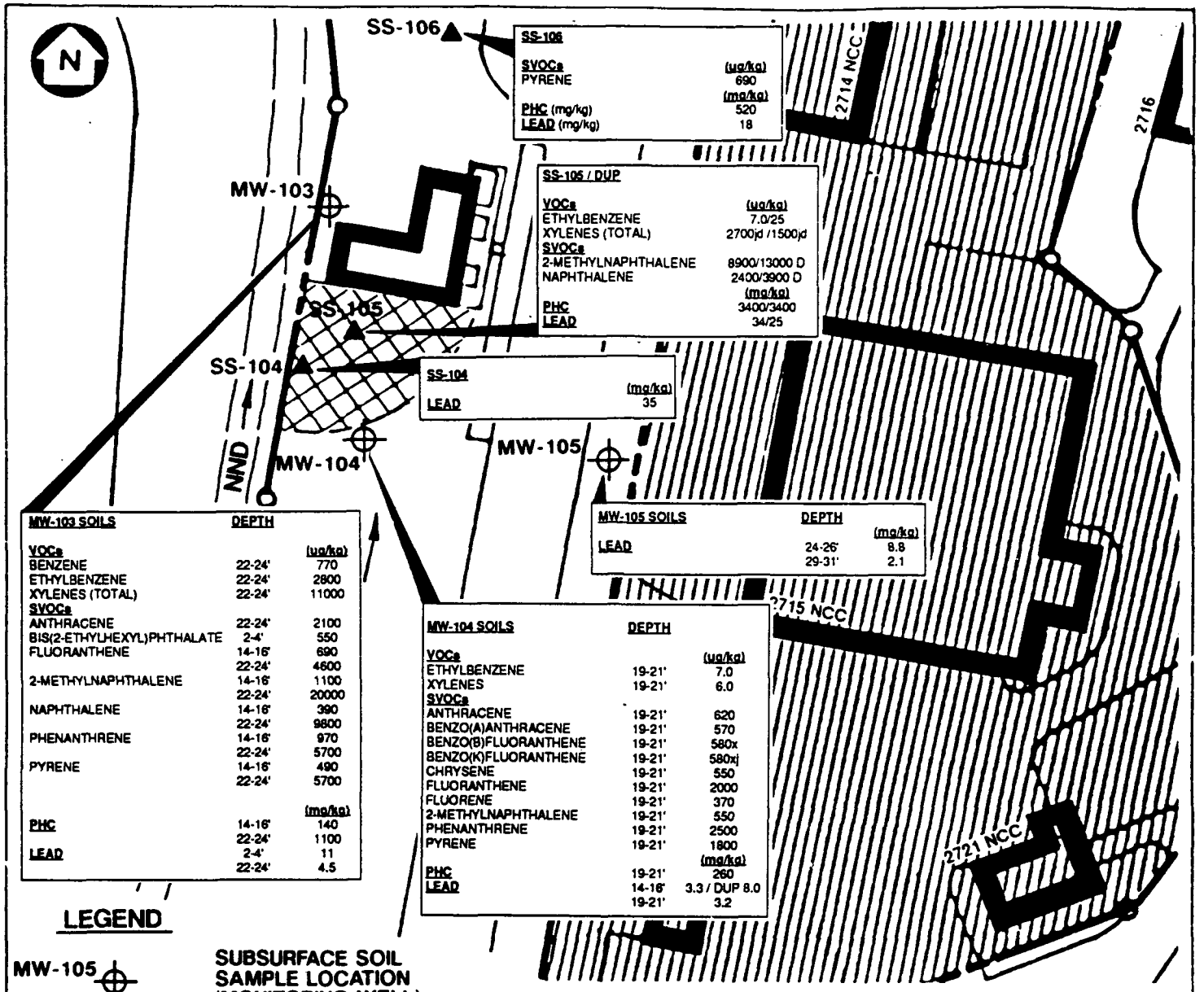


FIGURE 3-5
SOIL ANALYTICAL DATA MAP: SITE 2
166th TAG
GREATER WILMINGTON AIRPORT
NEW CASTLE, DELAWARE

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5411-03

ethylbenzene, and total xylenes. VOC contamination in soils from MW-103 and MW-104 is observed only in the deepest sample in each soil boring (24 and 21 feet, respectively). The level of VOC contamination varies from slightly greater than background values in soil from MW-104, to extremely high values (i.e., from 2,000 to 10,000 ppb) in soils from MW-103 and SS-105.

The distribution of SVOCs and PHCs in subsurface soils is similar to VOCs. Soils from MW-103 and MW-104 contain abundant SVOC (500 to 20,000 ppb) and PHC (140 to 1,100 ppm) contamination, with no detected SVOCs or PHCs in soils from MW-105. As with the VOCs, the levels of SVOC and PHC contamination increase with sample depth in the borings.

The surface soils (SS-105 and SS-106) also demonstrate the presence of significant SVOC (700 to 13,000 ppb) and PHC (500 to 3,400 ppm) contamination. SVOCs include PAHs, which are indicative of fuel-related contamination. Results from the lead analysis indicate background values in subsurface soil samples and values ranging from 18 to 35 ppm for surface soil samples.

3.2.3 Site 4B

Soil samples were collected from one other location for analysis. During the drilling program, field-screening results from MW-111 indicated the potential for significant hydrocarbon contamination from deep samples; as a result, one analytical sample was taken (Figure 3-6). Results are consistent with the field-screening results (see Appendix F). The contamination and sampling depth reported from MW-111 is summarized in Figure 3-6. VOCs detected include ethylbenzene and total xylenes (17,000 and 74,000 ppb, respectively). SVOCs (naphthalene at 11,000 ppb and 2-methylnaphthalene at 31,000 ppb) and total PHCs (420 ppm) were also detected at high levels. No lead was reported from the soil sample at MW-111.

3.2.4 Site 5

Soil sampling at Site 5 was restricted to soil borings only. Seven samples were collected from test borings at MW-106, MW-107, and MW-108. Figure 3-7 illustrates these exploration locations.

Analytical data for soil samples are in Appendix F. The distribution and concentration of contamination and sampling depth are summarized in Figure 3-7. VOC contamination was observed in only the shallowest sample (4 feet) of MW-108, where 17,000 ppb of total xylenes were reported. SVOC and total PHC contamination also was observed only in soils from MW-108. The three analytical samples from MW-108 detected naphthalene (500 to 4,000 ppb), 2-methylnaphthalene (500 to 8,500 ppb), and PHCs (440 to 1,200 ppm). SVOC and total PHC concentrations decreased with sample depth. Results of lead analyses indicate low values in all soil samples.

3.3 GROUNDWATER ANALYTICAL DATA

Groundwater data from monitoring wells and piezometers are summarized in Subsections 3.3.1 through 3.3.4. During the SI field program, 14 groundwater

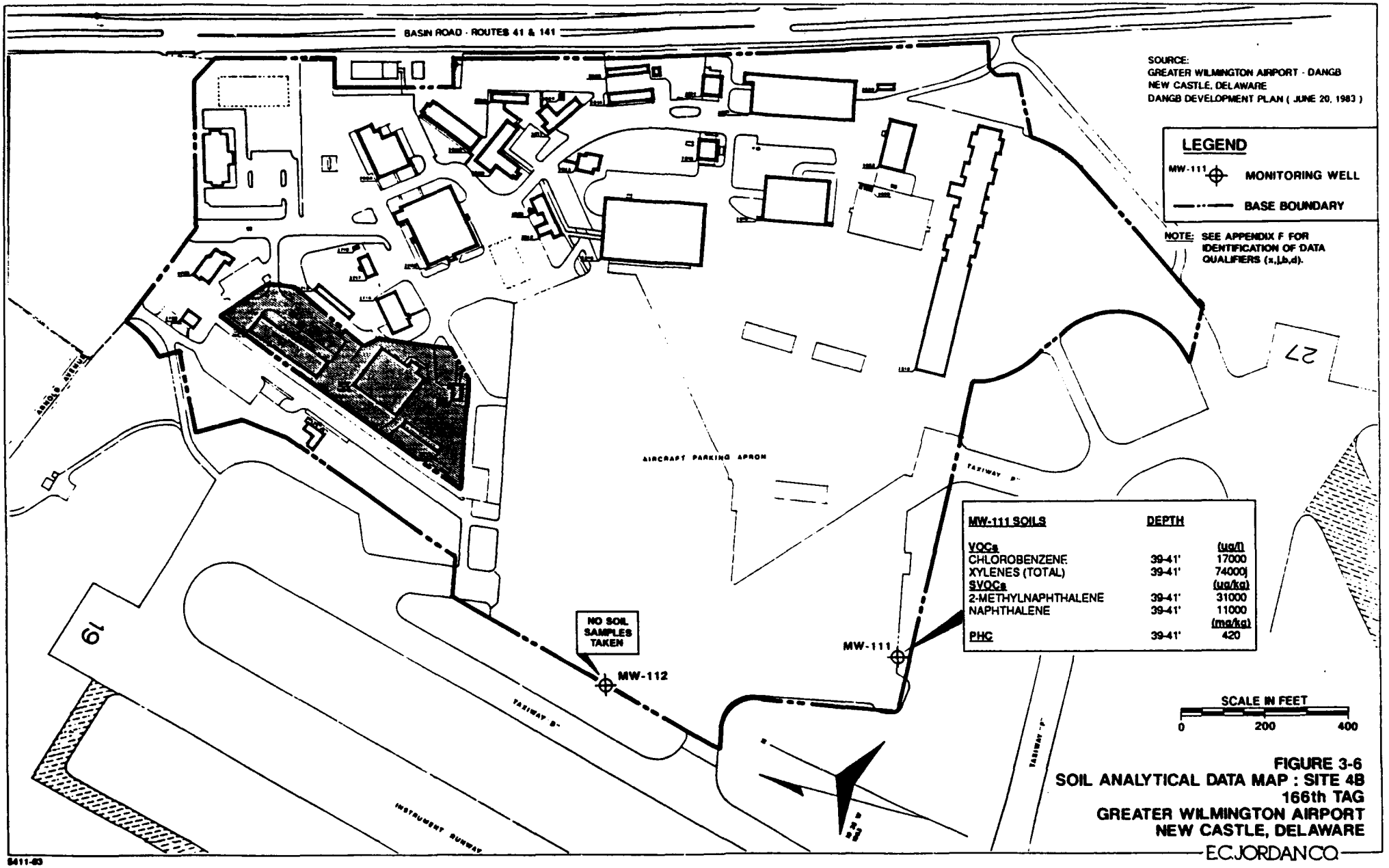

FIGURE 3-6
SOIL ANALYTICAL DATA MAP : SITE 4B
166th TAG
GREATER WILMINGTON AIRPORT
NEW CASTLE, DELAWARE

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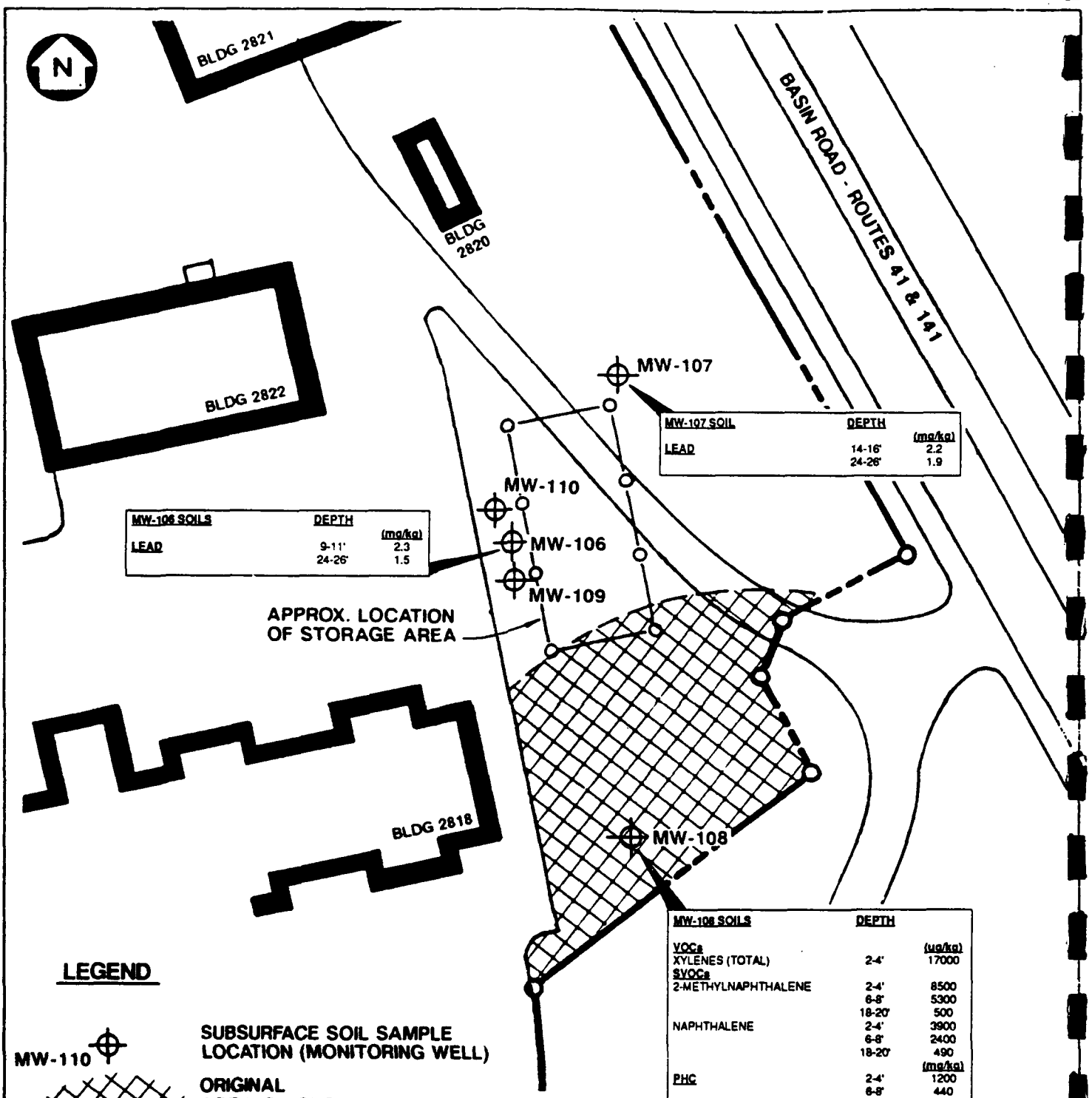

NOTE: SEE APPENDIX F FOR IDENTIFICATION OF DATA QUALIFIERS (x,j,b,d)

FIGURE 3-7
SOIL ANALYTICAL DATA MAP: SITE 5
166th TAG
GREATER WILMINGTON AIRPORT
NEW CASTLE, DELAWARE

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samples were collected and analyzed for TCL VOCs and SVOCs, lead, and total PHCs. CLP methods were used for VOC, SVOC, and lead analysis, and USEPA Methods 3550/418.1 were used for PHC analysis. Duplicate analysis was performed on 10% of the samples and typically gave results in the acceptable range (see Appendix F). Contaminated groundwater was observed at all sites. Most contamination was related to hydrocarbons; however, halocarbons were detected in groundwater at Sites 1, 4A, and 5.

3.3.1 Site 1

Groundwater was sampled from MW-101 and MW-102 at Site 1 (see Figure 3-4); the results are in Appendix G. Analytical data from water samples at Site 1 are summarized in Figure 3-8. TCL organic analytes (i.e., VOCs or SVOCs), total PHCs, and lead were not detected in groundwater from MW-102. However, groundwater from MW-101 contained several VOCs (i.e., 1,1-dichloroethane [DCA], 2-butanone, benzene, and ethylbenzene); these concentrations ranged from 6 to 30 µg/ℓ. As in MW-102, no SVOCs, lead, or total PHCs were detected in water from MW-101.

3.3.2 Site 2

Three groundwater samples and one duplicate were collected at Site 2. Monitoring wells sampled included MW-103, MW-104, and MW-105, with a duplicate sample of MW-103; analytical data are in Appendix G. Analytical data for Site 2 are summarized in Figure 3-9. Significant levels of VOC contamination were reported in MW-103 and MW-104, with somewhat lower levels reported in MW-105. VOC contaminants include benzene (75 to 2,000 µg/ℓ), toluene (0 to 9,300 µg/ℓ), ethylbenzene (40 to 800 µg/ℓ), and total xylenes (0 to 3,800 µg/ℓ).

A wide range in SVOCs, total PHCs, and lead contamination was also observed in groundwater samples from Site 2. MW-103 exhibits a large variety of SVOCs, with concentrations ranging from 500 to 100,000 µg/ℓ. A large concentration range was reported for SVOCs between MW-103 and the duplicate. This variability is probably due to the presence of free product in MW-103 (see Subsection 4.1.2), which is supported by the results for total PHCs, with 6.8 and 1.2 volume percent reported for the sample and duplicate. SVOCs were not detected in groundwater from MW-105. Several SVOCs were reported in groundwater from MW-104, at concentrations in the 50 to 100 µg/ℓ range. The total PHCs concentration ranges from approximately 5 µg/ℓ in MW-104 and MW-105, to the presence of free product in MW-103. Lead values range from 12 µg/ℓ in MW-105, to approximately 130 µg/ℓ in MW-103 and MW-104.

3.3.3 Sites 4A and 4B

Groundwater samples were collected from basewide monitoring wells MW-111 (Site 4B) and MW-112 (Site 4A). Results are presented in Appendix G and summarized in Figure 3-10. VOCs were detected in both monitoring wells; however, hydrocarbons were only observed in MW-111 and MW-111 offset and halogenated solvents were only reported in MW-112. Benzene (7,900 to 8,600 µg/ℓ), toluene (13,000 µg/ℓ), ethylbenzene (850 to 1,000 µg/ℓ), and total xylenes, (3900 to 4,300 µg/ℓ) were found in MW-111 and MW-111 offset; TCE (9 µg/ℓ) and PCE (7 µg/ℓ) were reported in MW-112.

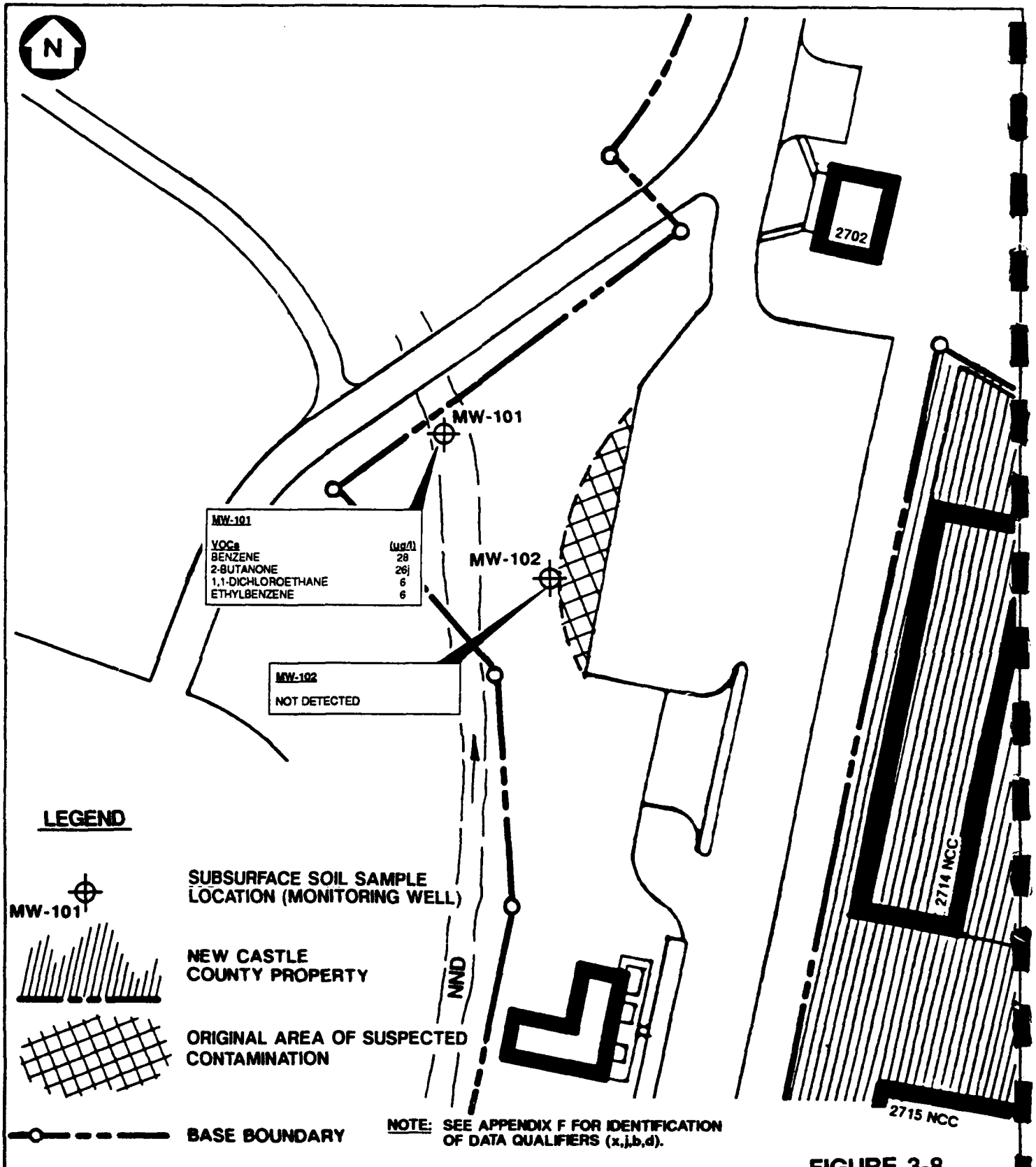

FIGURE 3-8
GROUNDWATER ANALYTICAL DATA MAP: SITE 1
166th TAG
GREATER WILMINGTON AIRPORT
NEW CASTLE, DELAWARE

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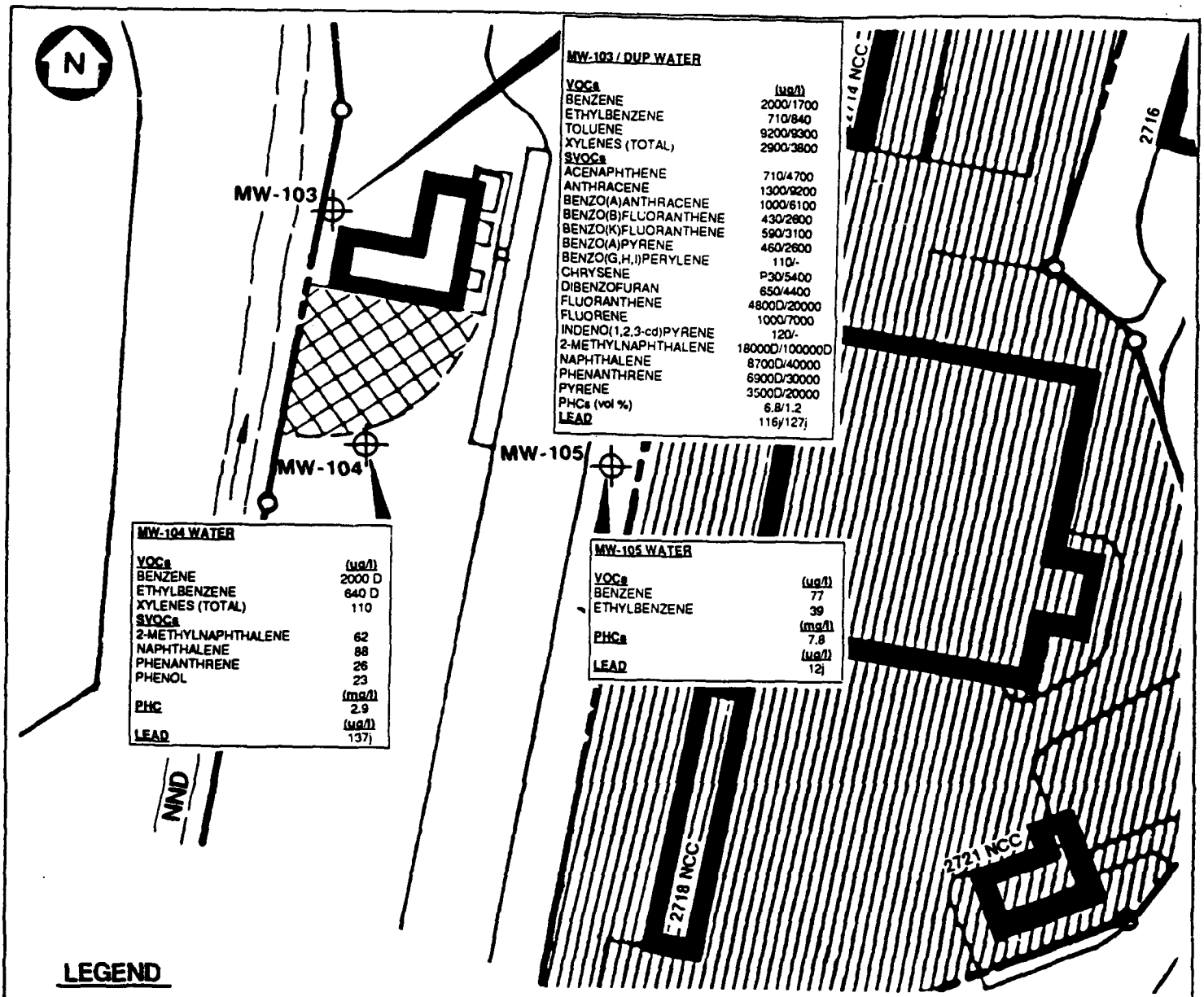

LEGEND

MW-105 — SUBSURFACE SOIL SAMPLE LOCATION (MONITORING WELL)

NEW CASTLE COUNTY PROPERTY

ORIGINAL AREA OF SUSPECTED CONTAMINATION

BASE BOUNDARY

NOTE:

SEE APPENDIX F FOR IDENTIFICATION OF DATA QUALIFIERS (x,j,b,d).

SOURCE:
GREATER WILMINGTON AIRPORT - DANGB
NEW CASTLE, DELAWARE
DANGB DEVELOPMENT PLAN (JUNE 20, 1983)

SCALE IN FEET

0 60 120

FIGURE 3-9
GROUNDWATER ANALYTICAL DATA MAP: SITE 2
166th TAG
GREATER WILMINGTON AIRPORT
NEW CASTLE, DELAWARE

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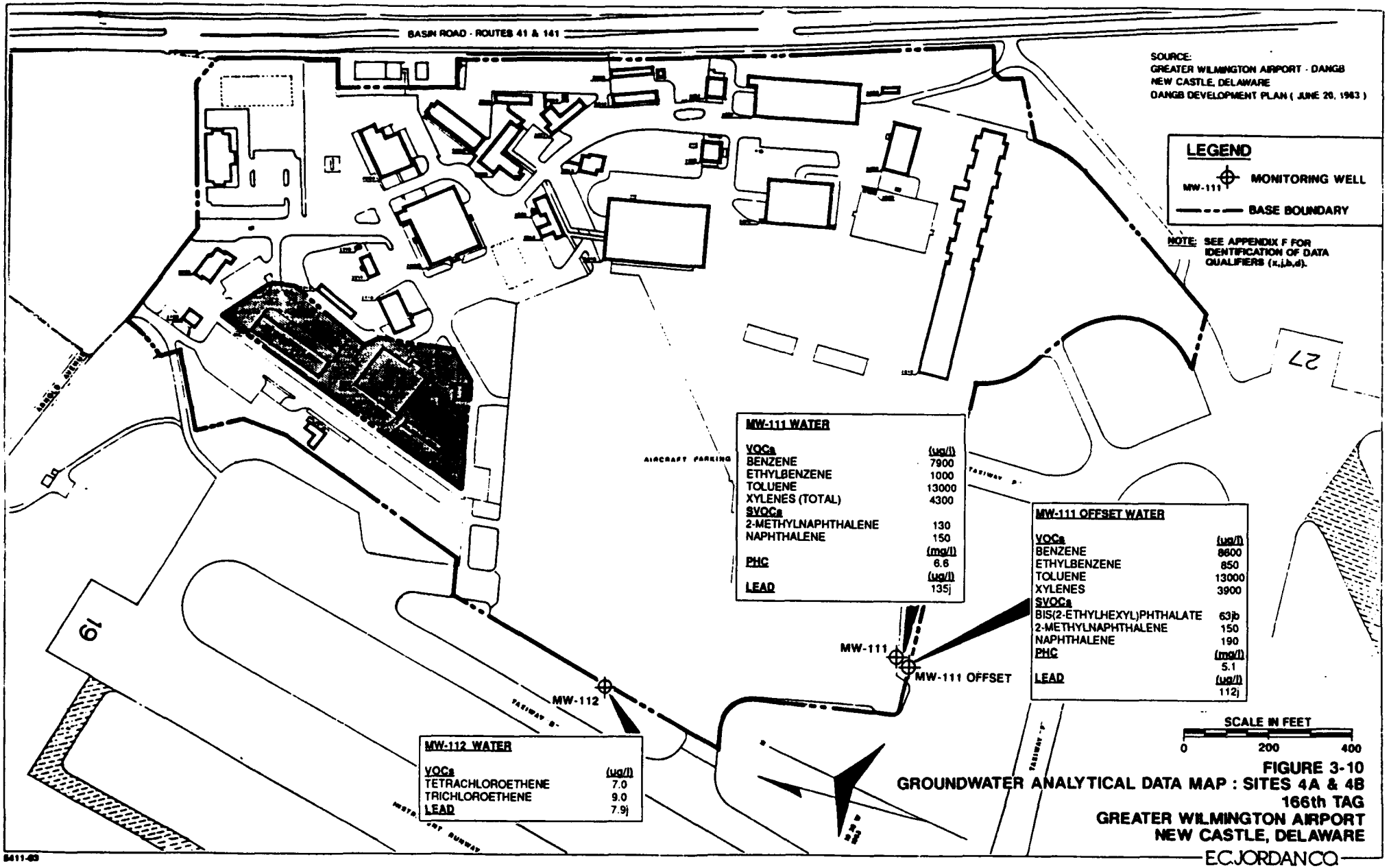

FIGURE 3-10
GROUNDWATER ANALYTICAL DATA MAP : SITES 4A & 4B
166th TAG
GREATER WILMINGTON AIRPORT
NEW CASTLE, DELAWARE

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5411-69

SVOCs and total PHCs were not detected in MW-112; however, naphthalene (150 to 190 µg/ℓ), 2-methylnaphthalene (130 to 150 µg/ℓ), and total PHCs (35.1 to 6.6 mg/ℓ) were reported in MW-111 and MW-111 offset. Lead was reported in both piezometers. Low values were found in MW-112 (8 µg/ℓ), and elevated values were found in MW-111 and MW-111 offset (112 to 135 µg/ℓ).

3.3.4 Site 5

Five analytical samples and one duplicate were collected at Site 5. The results demonstrate the presence of both hydrocarbon and halogenated solvent groundwater contamination (see Appendix G). The groundwater contamination observed at Site 5 is summarized in Figure 3-11.

VOC hydrocarbons were observed only in MW-108 and include benzene (7 µg/ℓ), ethylbenzene (54 µg/ℓ), and total xylenes (58 µg/ℓ). PCE was the only VOC detected in groundwater from MW-106, MW-107, MW-109, and MW-110, ranging from 6 to 12 µg/ℓ. SVOCs and total PHCs were not detected in the monitoring wells with PCE except for MW-109, where 8 µg/ℓ total PHCs were reported. This value is thought to be related to well development contamination (see Subsection 2.10).

SVOCs and total PHCs were detected in groundwater from MW-108; however, most SVOC data were rejected during data validation (the levels reported were all below detection limits. See Appendix G-2). Naphthalene, the only nonrejected compound, occurred at a low concentration (15 µg/ℓ). Total PHCs were detected in the duplicate analysis for MW-108 (2.1 µg/ℓ), but not in the original sample.

Lead was observed in several groundwater samples at Site 5. MW-106, MW-108, MW-109, and MW-110 detected lead ranging from 60 to 160 µg/ℓ; however, lead was not reported for MW-107.

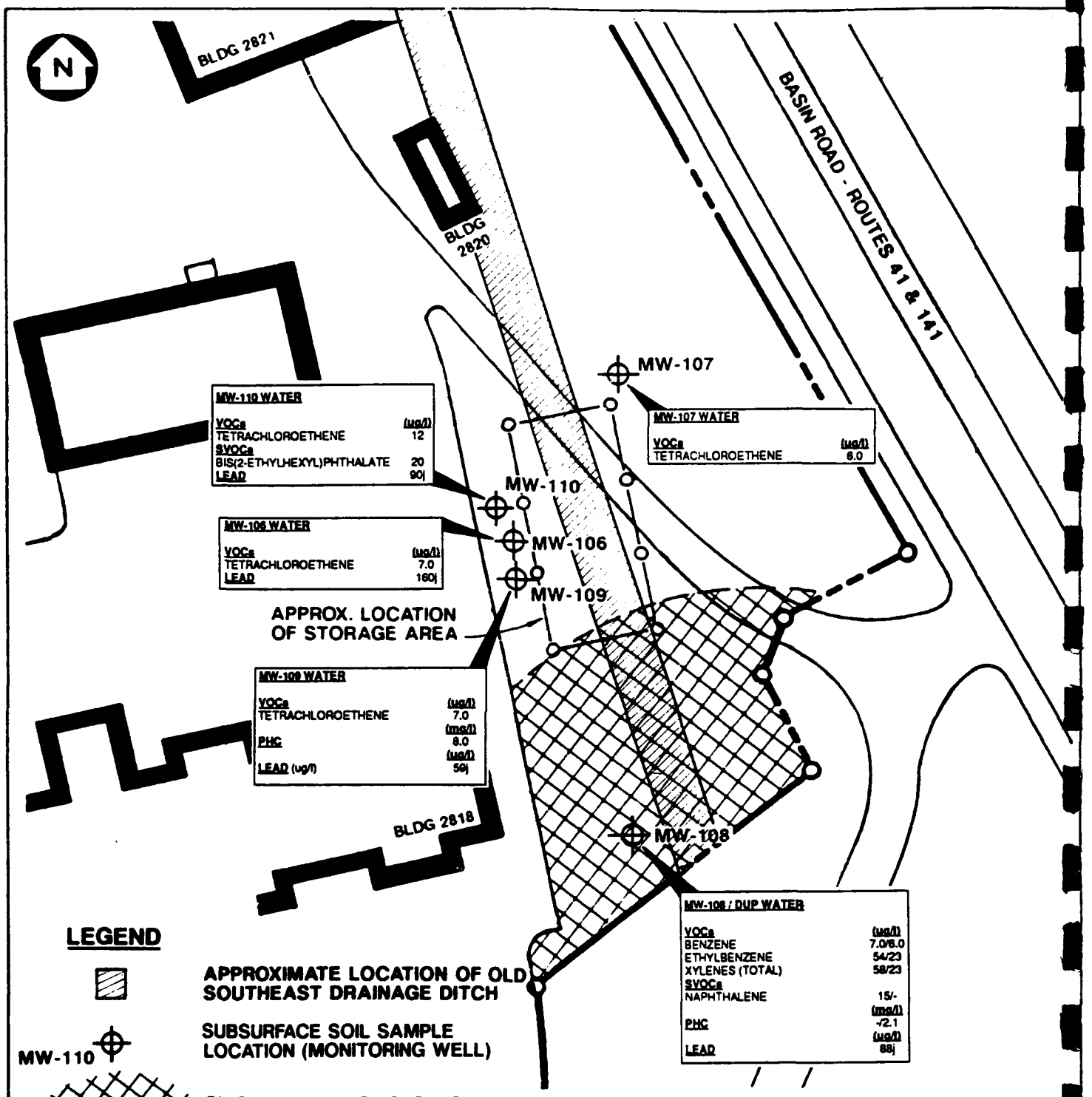

FIGURE 3-11
GROUNDWATER ANALYTICAL DATA MAP: SITE 5
166th TAG
GREATER WILMINGTON AIRPORT
NEW CASTLE, DELAWARE

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4.0 FINDINGS

The findings presented in this section are based on Jordan's field investigations and review of existing data and reports. The current understanding of the source contamination status is in Subsection 4.1.

4.1 SOURCE CHARACTERIZATION

Jordan evaluated three sites for the presence or absence of contamination and observed contamination at two other locations. Fuel-related contamination was observed at the three sites, and solvent contamination was observed at Sites 1 and 5. Unanticipated contamination was also observed at Sites 4A and 4B. The following subsections describe the nature of the observed contamination at the five sites.

4.1.1 Site 1

Various types of hydrocarbon contamination are found at Site 1. MW-102 and SS-103 were located in the area indicated to be impacted by the practice of refueler trucks periodically purging tanks (see Figure 1-2). The land surface slopes west, toward the NDD (approximately 100 feet away), leading away from Base property. Results of analytical soil and water data do not indicate the presence of TCL VOCs and SVOCs in this area, but PHCs were found in SS-103.

Hydrocarbon contamination was observed in groundwater from MW-101 (VOCs) and in surface soil samples (SVOCs and PHCs) in from the NDD (SS-101 and SS-102). The contamination does not appear related to tank purging because both the ditch and MW-101 are downslope from the truck purging area (see Figure 3-4), which does not exhibit SVOC and VOC contamination. MW-101 has TCL VOCs in the groundwater (i.e., DCA, benzene, and ethylbenzene). GC field-screening data from soil samples both above and below the water table indicates the presence of the VOCs benzene and toluene, and therefore, are consistent with results from the groundwater data.

Similarly, the SOV survey at Site 1 detected TCA; DCA is a transformation product of TCA. The VOCs in the analytical soil samples may have been volatilized prior to analysis. MCLs for benzene, DCA, and ethylbenzene are 5, 7, and 700 µg/ℓ, respectively. Groundwater in MW-101 exceeds the level for benzene and is just below the level for DCA.

The source for the observed contamination is not clear since MW-101 has the highest water level measured in the water table aquifer. Potential sources include as yet undetermined contamination upgradient from MW-101. A more likely source for the observed contamination is related to the basewide storm sewer and surface drainage system. The northern portion of the Base drainage system empties into the NDD south of Site 1. The NDD also receives surface runoff from an adjacent GWA runway. This drainage flows into a large catch basin adjacent to MW-101. This catch basin is also the locus of several other underground surface drainage outflows. Leakage from this drainage system could give rise to the observed contamination in MW-101.

4.1.2 Site 2

High levels of hydrocarbon contamination were observed in both soils and groundwater from Site 2. MW-104 and surface soil samples SS-104 and SS-105 were sited in the general area of the 10,000-gallon AVGAS spill (see Figure 3-5). The AVGAS was spilled while being transferred from the 50,000-gallon USTs on the southern side of the POL building. Analytical data from these locations do show VOC, SVOC, total PHC, and lead contamination; however, the highest contamination levels in soils from MW-104 are in the deepest sample. SS-104 and SS-105 have high lead values, probably from the AVGAS spill. The fuel currently stored in the USTs (JP-4) contains no lead and the lead values in the subsurface samples are low.

The highest contamination levels at Site 2 were found in MW-103. As in MW-104, the contamination level in soils from MW-103 increases with depth, and the lead values are low. Additionally, up to 1 foot of a floating, nonaqueous-phase liquid free product was found in MW-103. The floating, nonaqueous-phase liquid free product observed in MW-103 (Site 2) is degraded, and is not observed in the other two Site 2 monitoring wells (MW-104 and MW-105). This information is interpreted to indicate that a large, migrating floating product does not occur at Site 2. The thickness of the free product was estimated by comparing the elevation of free product measured at MW-103 to predicted water levels at MW-103 (see Figure 1-8). These data suggest that the hydrocarbon contamination source is leaks in the adjacent 50,000-gallon USTs associated with the POL building. MCLs for benzene are exceeded in MW-103, MW-104, and MW-105. MCLs for toluene (2,000 µg/ℓ) and ethylbenzene are also exceeded in groundwater from MW-103, and groundwater from Site 2 is predicted to flow southwest (see Figure 1-8), which indicates that contaminated groundwater is moving directly off-base at Site 2.

4.1.3 Site 4A

PCE and TCE were detected at Site 4A in groundwater from MW-112 and exceed MCLs (5 µg/ℓ) for drinking water. No soil samples were collected from MW-112; however, GC field-screening data from split-spoon soil samples indicated the presence of both PCE and TCE. The concentration of these solvents also increased with sample depth, and the highest values were found in samples below the water table. These data indicate that a source for the observed groundwater contamination at Site 4A is upgradient of MW-112. The Phase I Records Search did not recommend Site 4 for future study, but discussed the history of activities in the Site 4 area. The Air Force initially used the area for airplane maintenance, as hangars were located in this area. From 1960 to 1974, Capital Airways used the area for similar activities. Since 1976 the ANG has washed airplanes in the area.

4.1.4 Site 4B

Hydrocarbon contamination (VOCs and SVOCs) was detected in both soils and groundwater of Site 4B. The levels of contamination in both media are high (see Figures 3-6 and 3-10), and the MCLs for drinking water for toluene, benzene, and ethylbenzene are exceeded. GC field-screening data support the

analytical data, demonstrating that the levels of VOC contamination increase in the deeper soil samples.

The contamination source at Site 4B is not clear. However, the increased levels of contamination with sample depth suggest that the exploration location is not directly in a source region. The lead values from groundwater at MW-111 are high, as stated for Site 4A, suggesting that a leaded fuel was involved at the contamination source. The Phase I Records Search did not recommend Site 4 for future study, but discussed the history of activities in the Site 4 area. An abandoned Air Force fuel line and fuel hydrants are located upgradient, northeast of Site 4B and could potentially contribute to the observed hydrocarbon contamination.

A second potential source for the contamination at Site 4B is the presence of an engine test stand. This facility, located in the southwestern corner of the Base, is approximately 100 feet downgradient from MW-111. Aircraft engines are mounted and tested at this facility; therefore, potential exists for spilling or leaking of fuels. The lead values from groundwater at MW-111 are high, suggesting that a leaded fuel was involved at the contamination source.

4.1.5 Site 5

Contamination at Site 5 was encountered in two areas. The SI study at Site 5 was initially formulated to investigate the SDD, historically an open trench, that was reported to have received various hydrocarbon and solvent wastes. The on-base portion of the SDD was reconstructed several years ago, and is currently a buried culvert, part of the basewide surface drainage system (see Figure 3-11). The SDD becomes exposed as an aboveground ditch southeast of the Base property line. During flooding conditions, the ditch may receive overflow from an oil/water separator that services shops on the Base.

The SOV survey identified two areas of contamination in the SDD vicinity; however, it is unclear whether the contamination is in fact related to the older reported releases. PCE was detected in the SOV survey near a fenced storage area (see Figures 3-3, 3-7, and 3-11). High Lead values (90-160 µg/ℓ) are also reported in three of the four monitoring wells adjacent to the fenced storage area (MW-106, MW-109, and MW-110). These values exceed the MCL for lead (50 µg/ℓ). The fenced storage area was initially put into service in November, 1977. Materials used for aircraft maintenance and the motor pool are typically stored in the facility. Materials stored there include 10W and 30W motor oil, hydraulic fluid, deicing fluid, and degreaser fluid. PCE values were highest in SOV sampling points adjacent to the fenced compound, decreasing with distance from the fenced storage area (see Table 3-1 and Figure 3-3). PCE was also detected (6 to 12 µg/ℓ) in monitoring wells adjacent to the fenced storage area (MW-106, MW-107, MW-109, and MW-110); however, soil samples did not contain halogenated solvents. GC field-screening of soil samples did detect PCE in MW-106 and MW-107, consistent with the SOV and groundwater data. The groundwater contamination levels are relatively low; however, the MCL for PCE is 5 µg/ℓ and is exceeded in all monitoring wells where it was detected.

A second area of contamination at Site 5, identified during the SOV survey, is located southeast of Building 2818 (see Figure 3-3). The contamination is restricted to fuel-related hydrocarbons and is found in a small area. MW-108 was sited in this area, and soils and groundwater both exhibit contamination. The level of contamination decreases with depth, suggesting a surface or near-surface source. The Base personnel indicated that this area had been used for fire-training exercises. The fire training activities in the Site 5 area have not occurred for approximately the past ten years, and in the past usage of the area for fire training activities was infrequent. Fuels were placed in large shallow pans, ignited, and then extinguished by the the Base fire department. The hydrocarbon contamination observed in this area is consistent with these practices.

Groundwater samples at this site contain lead, several SVOCs, VOCs, and PAHs (see Figure 3-11). Because the SDD is the locus of the southern portion of the the Base surface drainage system, basewide waste may have washed into the open drainage ditch, contaminating surface water and sediments. The drainage in the ditch flows through a residential neighborhood upon exiting the Base property (see Figure 1-2). Sampling data are not available for media from the ditch; therefore, it cannot be established whether wastes are being transported from the Base.

5.0 CONCLUSIONS

Section 5.0 summarizes the conclusions from the SI program at the Base. The conclusions are based on the results from analytical data and the synthesis of geologic and hydrogeologic information.

5.1 SITE 1

Results of analytical soil and groundwater data from Site 1 indicate that environmental contamination is present however more samples are necessary to evaluate contamination at the site. This is illustrated in Figure 5-1 where observed and suspected areas of contamination are indicated. Contamination at Site 1 was shown to be concentrated in sediment in the NDD and in groundwater from MW-101 (Figure 5-1). Groundwater contamination in MW-101 is also believed to be related to surface drainage concentrated in a catch basin adjacent to MW-101.

5.2 SITE 2

Soil and groundwater from Site 2 contain the highest contamination levels observed on the Base. Surface soils exhibit VOC, SVOC, total PHC, and lead contamination. Subsurface soil contamination was observed in MW-103 and MW-104 (Figure 5-2). Contamination includes VOCs, SVOCs, total PHCs, and lead, with the highest levels occurring in the deepest samples. Groundwater contamination at Site 2 was observed in all three monitoring wells (MW-103, MW-104, and MW-105) (Figure 5-2), and includes VOCs, SVOCs, total PHCs, and lead. The surface soil contamination is believed to be related to the historic AVGAS spill.

5.3 SITE 4A

Groundwater contamination was detected at Site 4A in MW-112. TCE and PCE occur at 9 and 7 µg/ℓ respectively, and exceed their MCLs. The groundwater contamination source is not identified; however, it probably occurs upgradient of MW-112.

5.4 SITE 4B

Subsurface soil and groundwater contamination were detected at Site 4B in MW-111. Contamination is fuel-related and includes VOCs, SVOCs, total PHCs, and lead. The contamination is unanticipated and a source has not been identified.

5.5 SITE 5

At Site 5, perched groundwater was encountered above the water table aquifer, and contamination is focused in two separate regions. The two areas of ob-

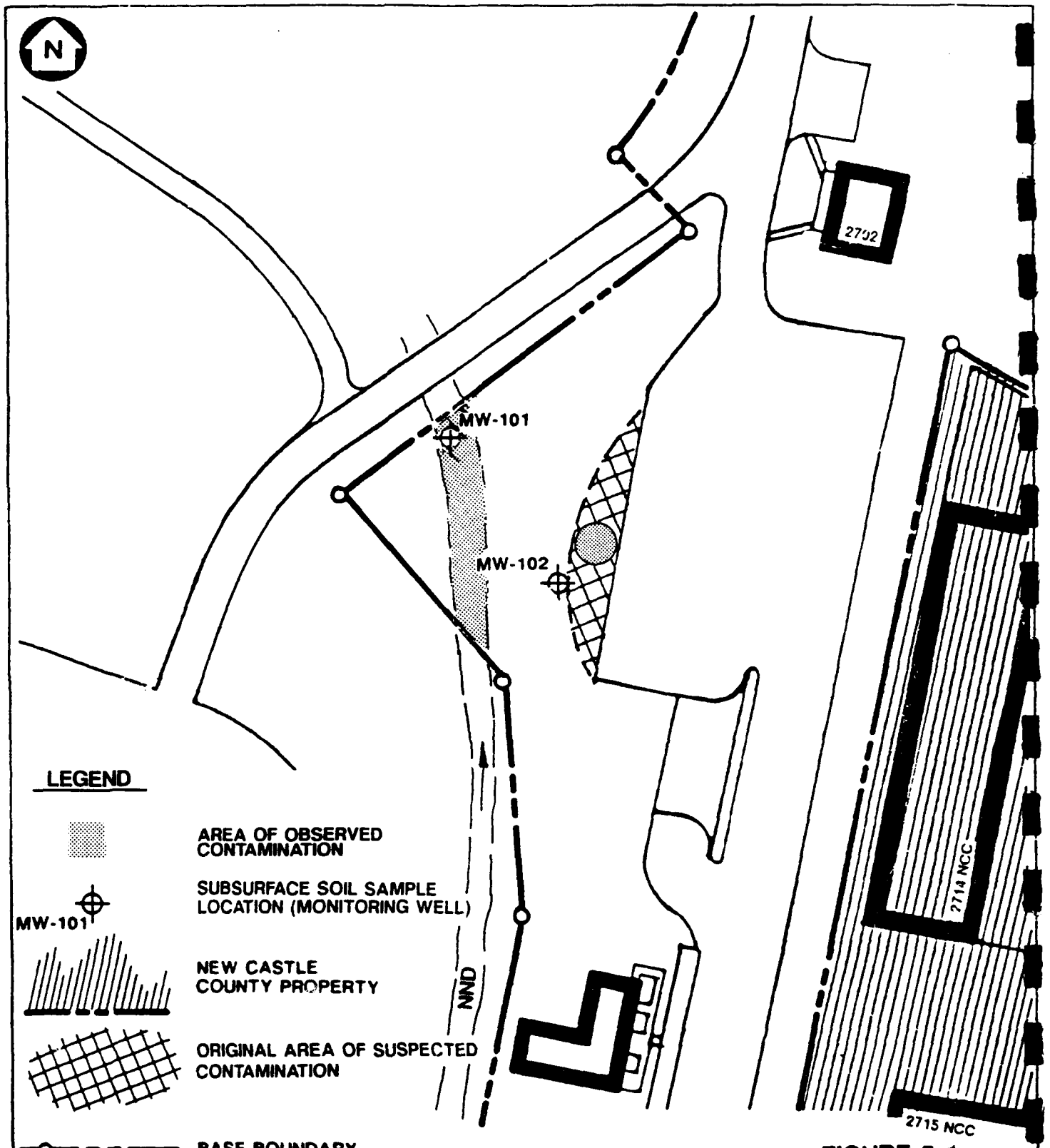

FIGURE 5-1
AREAS OF OBSERVED AND SUSPECTED CONTAMINATION
SITE 1
166th TAG
GREATER WILMINGTON AIRPORT
NEW CASTLE, DELAWARE

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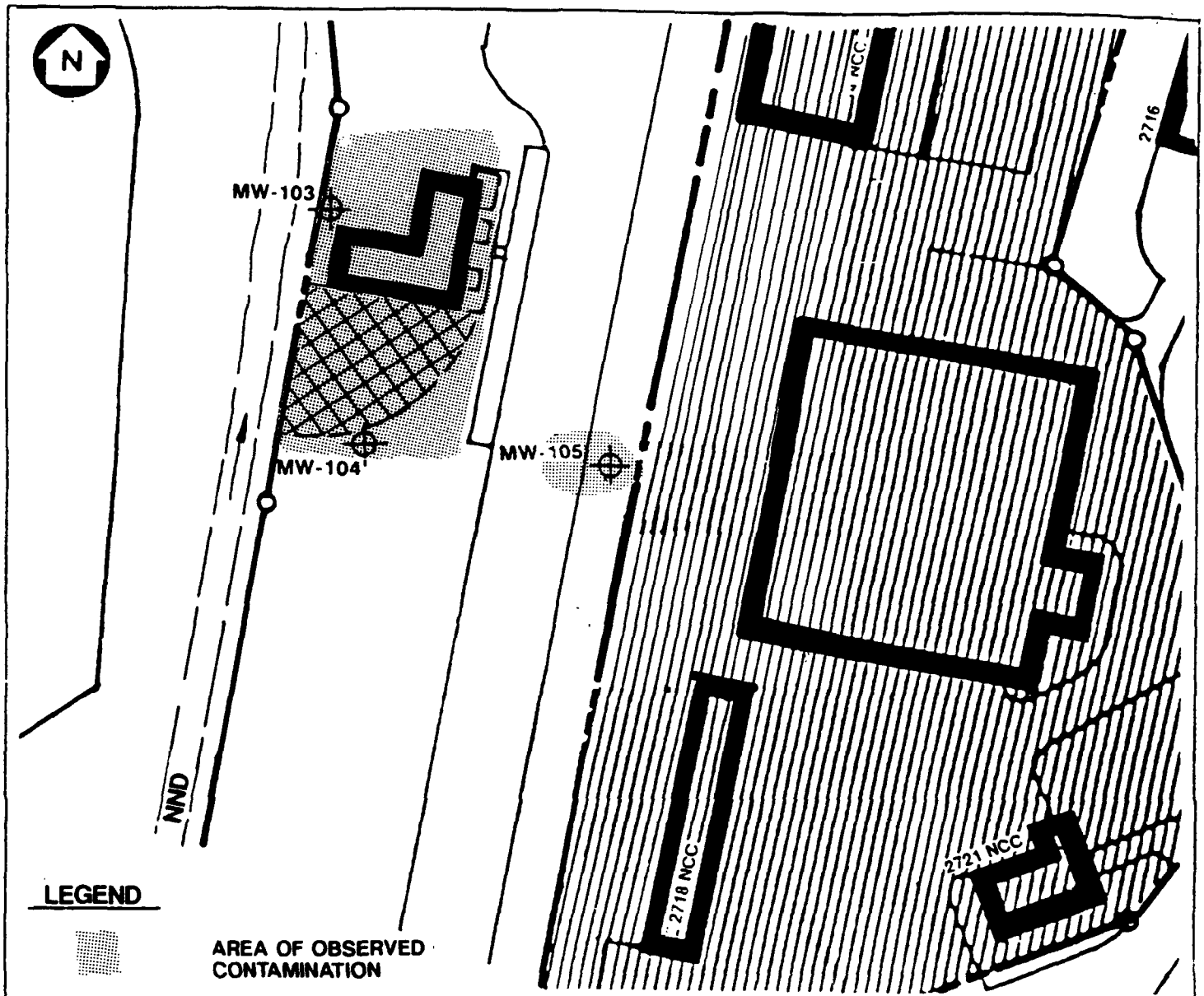

LEGEND

AREA OF OBSERVED CONTAMINATION

MW-105 SUBSURFACE SOIL SAMPLE LOCATION (MONITORING WELL)

NEW CASTLE COUNTY PROPERTY

ORIGINAL AREA OF SUSPECTED CONTAMINATION

BASE BOUNDARY

SOURCE:
GREATER WILMINGTON AIRPORT - DANGB
NEW CASTLE, DELAWARE
DANGB DEVELOPMENT PLAN (JUNE 20, 1983)

SCALE IN FEET

0 60 120

FIGURE 5-2
AREAS OF OBSERVED AND SUSPECTED CONTAMINATION
SITE 2
166th TAG
GREATER WILMINGTON AIRPORT
NEW CASTLE, DELAWARE

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5411-03

served contamination and the original area of suspected contamination for Site 5 are shown in Figure 5-3. PCE and lead were observed in groundwater from monitoring wells adjacent to a fenced storage facility, and were present in both the perched water and the water table aquifer. The PCE contamination source is believed to be related to degreasing solvents staged in the fenced storage area.

A second area of contamination at Site 5 is located southeast of Building 2818. Fuel-related hydrocarbon contamination was detected in soils and groundwater from MW-108. The fuel contamination in subsurface soils and perched groundwater at MW-108 included VOCs, SVOCs, total PHCs, and lead. Contamination levels in subsurface soils decreased with sampling depth. The source for this hydrocarbon contamination is related to past fire-training exercises carried out by the Base Fire Department. Groundwater flow at Site 5 in the water table aquifer is southwest.

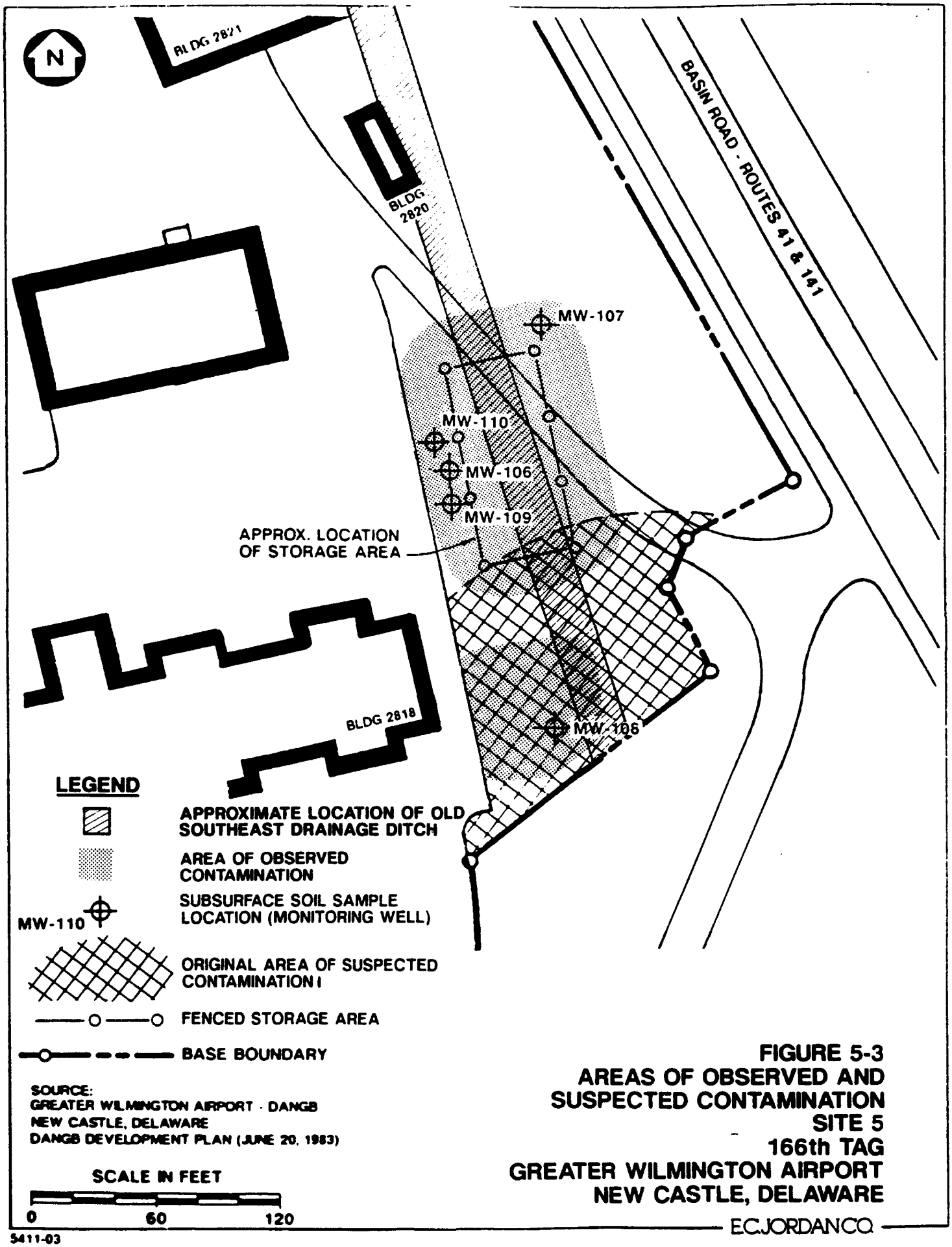

FIGURE 5-3
AREAS OF OBSERVED AND SUSPECTED CONTAMINATION
SITE 5
166th TAG
GREATER WILMINGTON AIRPORT
NEW CASTLE, DELAWARE

EC JORDAN CO

5411-03

6.0 RECOMMENDATIONS

Jordan's SI field studies at the Base were conducted to determine the presence or absence of contamination in the soils and groundwater at three sites and to characterize the basewide geology and hydrogeology. Results of studies at three sites and basewide explorations demonstrate the presence of various contamination levels in the three sites and at two unanticipated locations (Sites 4A and 4B).

The studies at Site 1 indicate the presence of environmental contamination. In addition to PHCs in surface soils in SS-103, contamination was also detected in areas adjacent to Site 1 (i.e., NDD and MW-101). Based on these findings, it is recommended that further studies be conducted at Site 1 to support risk and feasibility efforts.

Contamination at Site 2 occurs in surface soils, subsurface soils, and groundwater. Based on the presence of this contamination, further studies are recommended at Site 2 to support risk and feasibility efforts.

Site 4 is divided into two parts (4A and 4B). Contamination at Site 4A occurs in groundwater and is restricted to the solvents PCE and TCE. Contamination at Site 4B is observed in soils and groundwater, including fuel-related hydrocarbons and lead. The source for environmental contamination at Sites 4A and 4B is not clearly understood, and investigations to define source areas and support risk and feasibility studies are recommended.

The results of investigation at Site 5 have identified two areas of environmental contamination. PCE and lead occur in groundwater adjacent to the fenced storage area, and fuel-related hydrocarbons occur in soil and groundwater in the area impacted by historical fire-training exercises. Lead contamination is found in groundwater from both areas. Based on these findings further investigations are recommended at both Site 5 areas to support risk and feasibility studies.

GLOSSARY OF ACRONYMS AND ABBREVIATIONS

ANG	Air National Guard
APA	Airport Parking Area
ARAR	Applicable or Relevant and Appropriate Requirements
AVGAS	aviation gasoline
AWQC	Ambient Water Quality Criteria
BTX	benzene, toluene, and xylene
CLP	Contract Laboratory Program
cm/sec	centimeters per second
DCA	1,1-dichloroethane
DNREC	Delaware Department of Natural Resources and Environmental Control
FS	Feasibility Study
ft/ft	feet per feet
ft/yr	feet per year
GC	gas chromatograph
GWA	Greater Wilmington Airport
HARM	Hazardous Assessment Rating Methodology
HAZWRAP	Hazardous Waste Remedial Actions Program
HMTC	Hazardous Materials Technical Center
ID	inside diameter
in/sec	inches per second
IRP	Installation Restoration Program
MCL	Maximum Contaminant Level
NDD	Northwest Drainage Ditch
OD	outside diameter
PAHs	polynuclear aromatic hydrocarbons
PCBs	polychlorinated biphenyls
PCE	tetrachloroethene
PHC	petroleum hydrocarbon
PI	photoionization
ppb	parts per billion
ppm	parts per million
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan

RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RI	Remedial Investigation
SDD	Southeast Drainage Ditch
SI	Site Investigation
SOV	soil organic vapor
SVOC	semivolatile organic compound
TAG	Tactical Airlift Group
TCA	trichloroethane
TCE	trichloroethene
TCL	Target Compound List
TRC	Tracer Research Corporation
USAF	U.S. Air Force
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound
µg/ℓ	micrograms per liter

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APPENDIX A

GROUND SURVEY DATA AND WATER LEVELS

WATER LEVEL SUMMARY TABLE
DANGB SITE INSPECTION

MONITORING WELL OR PIEZOMETER	WATER LEVELS (NGVD) 10/25/88	11/14/88
MW-101	32.40	32.20
MW-102	32.25	32.06
MW-103*	32.52	32.20
MW-104	30.94	30.74
MW-105	31.77	31.54
MW-106	27.43	27.34
MW-107	41.65	41.59
MW-108	42.53	42.41
MW-109	42.67	42.52
MW-110	42.33	41.35
MW-112	25.51	25.34
P-110	28.49	28.30
MW-111	25.58	25.42
MW-111 Offset	25.55	25.40
P-112	40.12(10/24)	39.98
P-112 Offset	40.26	40.12

*Difficult to measure due to product in the well

JOB# 357
DATE NOV 26,1988

DELAWARE NATIONAL GUARD BASE
NEWCASTLE, DELAWARE
WELL & BORING LOCATIONS

WELL #	ELEVATIONS GROUND	INNER	OUTER	COORDINATES NORTH	EAST
P-109	61.21	62.51	62.33	613,907.30	604,481.90
P-110	64.34	66.21	65.76	614,412.79	605,361.09
P-111	66.36	67.88	67.76	613,308.52	604,848.30
P-111*	66.26	67.60	67.34	613,302.22	604,844.72
P-112	64.35	66.21	65.98	613,379.66	605,517.49
P-112*	64.51	65.95	65.64	613,392.97	605,511.82
MW-101	45.57	47.37	47.57	615,049.49	604,676.77
MW-102	50.08	51.85	51.85	614,980.79	604,730.07
MW-103	53.12	54.91	54.41	614,791.72	604,703.60
MW-104	53.18	54.09	53.90	614,699.29	604,716.07
MW-105	54.71	56.47	56.66	614,688.45	604,813.88
MW-106	62.83	64.33	64.37	613,775.18	606,099.52
MW-107	63.99	65.33	65.48	613,849.90	606,145.31
MW-108	62.64	64.36	65.00	613,648.68	606,151.90
MW-109	63.13	64.90	64.57	613,763.15	606,100.80
MW-110	62.81	63.89	63.68	613,784.56	606,095.69
UST-1	52.74			614,672.70	604,696.52
UST-2	54.88			614,528.35	604,713.72
UST-3	55.03			614,476.80	604,676.95
PUBLIC SUPPLY WELLS					
PSW-A	41.0			616,209.44	604,997.18
PSW-B	69.5			614,865.69	605,679.70
PSW-C	61.9			613,069.17	606,567.65

* Offset well
Horizontal Datum NAD 1983
Vertical Datum NGVD 1929

NOTE:

P-111 is MW-111
P-111* is MW-111 offset
P-109 is MW 112

APPENDIX B

SOIL BORING LOGS AND MONITORING WELL INSTALLATION DETAILS

DELAWARE AIR NATIONAL GUARD, NEW CASTLE, DELAWARE			Boring no: MW-101
Client HAZWRAP			Project no: 5411-02
Contractor JOHN MATHES & ASSOC., INC.		Date started 10/5/88	Completed 10/5/88
Method HSA	Casing size 4.25" ID	PHOTOVAC 10.2	Protect'n level D
Ground el. 45.57	Soil drilled 22'	Rock drilled NA	Total depth 22'
Logged by P. Bolmer	Ch'd by MP Dickerson	Date 1/12/89	▽ Below grnd

Depth (ft)	Spmn PID ambient air	Sample no. and type	Sample	CLP	GC	PEN/REC	HNU headspace (ppm)	Soil/rock description	Soil class or rock fractures	Blows/6-in. or RQD % 0 20 40 60 80 100	Well data
0	Bkg	S-1			✓	2 2		SAND TOPSOIL & ORGANICS OVER BROWN MED. TO FINE SAND, TR. GRAVEL, MOIST, LOOSE TO COMPACT. BLACK ASH LENS AT 2.5'	SP/SW	1 4 5 5	
	3.5	S-2			✓	1.2				3 3 2 2	Δ
5	3.6	S-3			✓	2 1.6				1 2 1 1	Δ
	Bkg	S-4			✓	2 1.6		6' (FILL TO 6')		2 2 6 7	
	Bkg	S-5			✓	2 1.3		SAND VARICOLORED BRN. TO ORANGE BRN. TO BRIGHT REDDISH BROWN MED. TO FINE SAND, TR. GRAVEL MOIST TO 14'		6 8 9 16	
10	Bkg	S-6			✓	2 1.9		THEN SATURATED, FEW SILT LENSES THROUGHOUT. STRATIFIED W/ LENSES BEING GAP GRADED TO WELL GRADED.	SP/SW	7 5 5 9	
	Bkg	S-7		✓	✓	2 1.9				3 4 5 10	▽
15	Bkg	S-8			✓	2 1.3		AFTER 14', COLORS ARE SUBDUED TO OLIVE BRN. TO dk. BRN. TO BLACK.	FEW ML	5 5 11 9	
	Bkg	S-9			✓	2 1.3				7 7 14 15	
	Bkg	S-10		✓	✓	2 1.9		BLUISH GRAY LENS OF MED. TO COARSE SAND @ 20'		5 8 15 12	
20	Bkg	S-11			✓	2 1.5				3 8 10 15	
								B.O.B. @ 22'			
25											
30											
35											
40											
45											

*U = Thin wall tube S = Split spoon R = Rock

E.C. JORDAN

DELAWARE AIR NATIONAL GUARD, NEW CASTLE, DELAWARE			Boring no: MW-102
Client HAZWRAP			Project no: 5411-02
Contractor JOHN MATHES & ASSOC., INC.		Date started	Completed 10-6-88
Method HSA	Casing size 4.25" ID	PHOTOVAC 10.2	Protect'n level D
Ground el. 50.08	Soil drilled 26'	Rock drilled NA	Total depth 26'
Logged by P. BOLMER	Ch'd by MP PICKENSIN	Date 1/12/89	▽ Below grnd

Depth (ft)	SPLIT SPOON PID ambient air	Sample no. and type	Sample	CLP	GC	PEN/REC HNU headspace (ppm)	Soil/rock description	Soil class or rock fractures	Blows/6-in. or RQD % 0 20 40 60 80 100	Well data
	Bkg	S-1	X		✓	2/1.9	SAND ORGANICS AND TOPSOIL OVER ORANGE TO BROWN SAND, MED. TO FINE, TR. GRAVEL, LOOSE, DAMP TO 4' THEN SATURATED. OCCASIONAL SILT LENSES. BLACK COAL LENS AT 1.5' (6" THICK)		7 4 15 12	
	Bkg	S-2	X		✓	2/1.1			10 9 8 8	
5	Bkg	S-3	X		✓	2/0.9			3 4 4 6	
	Bkg	S-4	X	✓	✓	2/1.0		SP/SW	5 6 7 10	
10	2.1	S-5	X		✓	2/1.4			4 4 4 6	
							10'-24' IS BLUISH GRAY MED. FINE SAND, TR GRAVEL TO 20', POORLY GRADED, LOOSE, DAMP			▽
15	Bkg	S-6	X		✓	2/1.7		FEW ML	7 7 9 10	
20	Bkg	S-7	X	✓	✓	2/1.6			4 7 8 20	
25	Bkg	S-8	X	✓	✓	2/1.2	SILT BLUISH GRAY, FIRM, SATURATED	ML	6 8 11 12	
							B.O.B. @ 26'			

*U = Thin wall tube S = Split spoon R = Rock

E.C. JORDAN

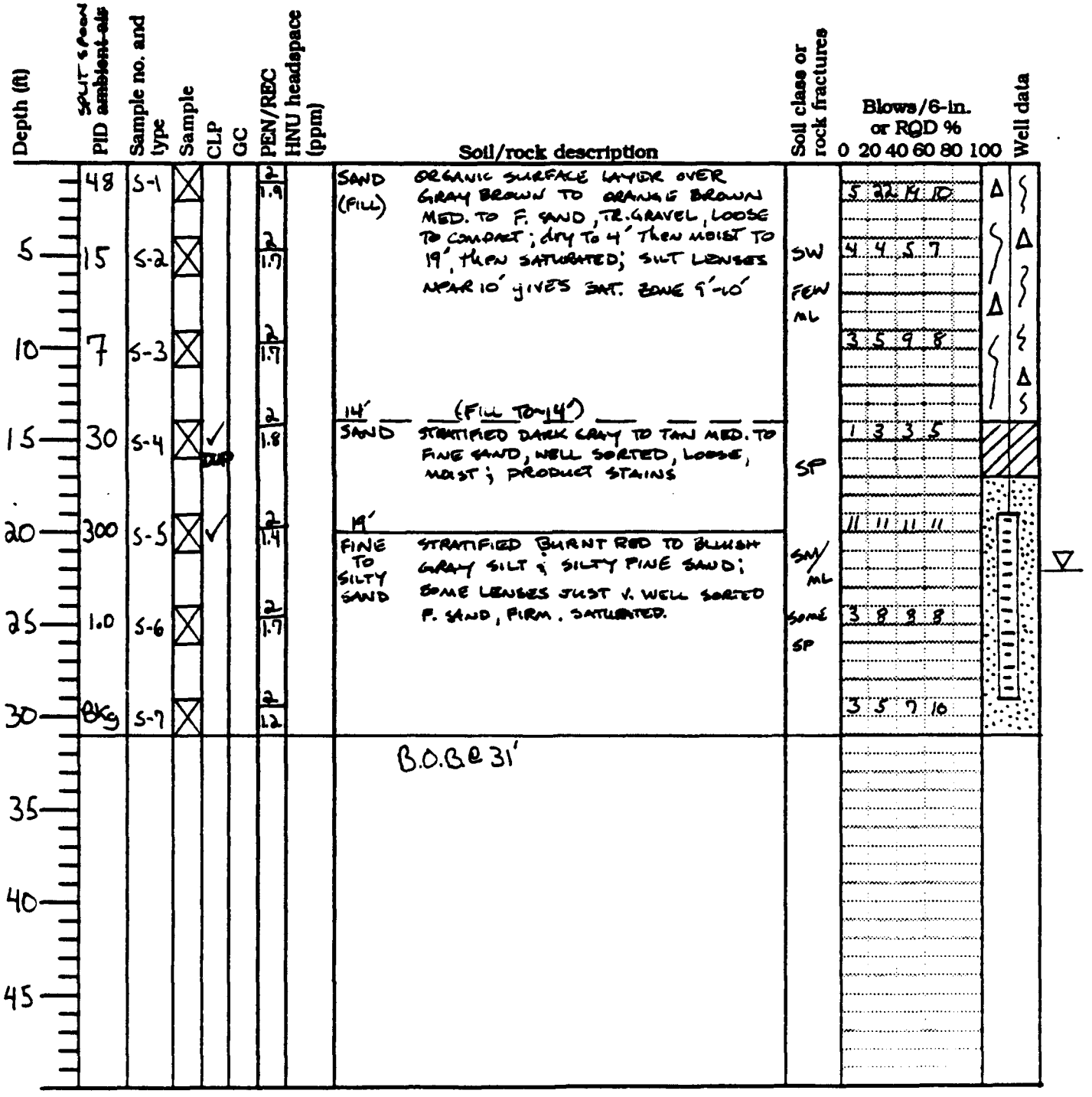
DELAWARE AIR NATIONAL GUARD, NEW CASTLE, DELAWARE			Boring no: MW-103
Client HAZWRAP			Project no: 5411-02
Contractor JOHN MATHES & ASSOC., INC.		Date started 10/14/88	Completed 10/14/88
Method HSA	Casing size 4.25" ID	PHOTOVAC 10.2	Protect'n level D
Ground el. 53.12	Soil drilled 30'	Rock drilled NA	Total depth 30'
Logged by P. Balmer	Ch'd by M P Dickerson	Date 1/12/89	▽ Below grnd

Depth (ft)	Split spoon PID ambient-air	Sample no. and type	Sample	CLP	GC	PEN/REC HNU headspace (ppm)	Soil/rock description	Soil class or rock fracture	Blows/6-in. or RQD % 0 20 40 60 80 100	Well data
0	80	S-1	☒		✓	2 1.5	SAND ORGANICS + TOPSOIL OVER BROWN TO DARK OLIVE TO TAN MEDIUM TO FINE SAND, TR. GRAVEL, POORLY GRADED, LOOSE, DRY TO 2' THEN MOIST TO 22' THEN WET. BLACK STAINS THROUGHOUT PROFILE DUE TO PRODUCT. FEW SILT LENSES.		4 14 20 20	Δ
	340	S-2	☒	✓	✓	2 1.5			20 15 10 7	Δ
5	120	S-3	☒		✓	2 1.2			3 4 2 2	
	300	S-4	☒		✓	2 1.2		SP	1 2 1 6	Δ
	70	S-5	☒		✓	2 1.2		FEW ML	4 7 6 6	Δ
10	120	S-6	☒		✓	2 1.2			1 2 3 3	
	60	S-7	☒		✓	2 1.4			5 5 6 6	
15	360	S-8	☒	✓	✓	2 1.6			4 10 12 13	
	300	S-9	☒		✓	2 1.6	AT 20', BLUISH GRAY SILT/F. SAND, FIRM, NON PLASTIC MOIST	ML	10 12 14 15	
20	400	S-10	☒		✓	2 1.9			8 8 13 7	▽
	400	S-11	☒		✓	2 1.6			4 15 25 25	
	400	S-12	☒	✓	✓	2 1.6	FROM 26' TO BOTTOM, BRIGHT ORANGE & BRIGHT RED FINE SAND & SILTS, STRATIFIED, COMPACT, WELL SORTED	SP/SM	4 12 9 14	
25	360	S-13	☒		✓	2 1.1			1 9 12 14	
	30	S-14	☒		✓	2 0.5				
	400	S-15	☒		✓	2 1.2			4 4 8 8	
30							B.O.B. 30'			
35										
40										
45										

*U = Thin wall tube S = Split spoon R = Rock

E.C. JORDAN

DELAWARE AIR NATIONAL GUARD, NEW CASTLE, DELAWARE			Boring no: MW-104
Client HAZWRAP			Project no: 5411-02
Contractor JOHN MATHES & ASSOC., INC.		Date started 10/17/88	Completed 10/17/88
Method HSA	Casing size 4.25" ID	PHOTOVAC 10.2	Protect'n level D
Ground el. 53.18	Soil drilled 31'	Rock drilled N/A	Total depth 31'
Logged by P. Bolmer	Ch'd by MP Dickenson	Date 1/12/89	▽ Below grnd



*U = Thin wall tube S = Split spoon R = Rock

Bkg = Background

E.C. JORDAN

DELAWARE AIR NATIONAL GUARD, NEW CASTLE, DELAWARE			Boring no: MW-105
Client HAZWRAP			Project no: 5411-02
Contractor JOHN MATHES & ASSOC., INC.		Date started 10/7/88	Completed 10/7/88
Method HSA	Casing size 4.25" ID	PHOTOVAC 10.2	Protect'n level D
Ground el. 54.71	Soil drilled 31'	Rock drilled NA	Total depth 31'
Logged by P. Bolmer	Ch'd by MP Dickenson	Date 1/12/89	▽ Below grnd

Depth (ft)	Spurr screen PID ambient air	Sample no. and type	Sample	CLP	GC	PEN/REC HNU headspace (ppm)	Soil/rock description	Soil class or rock fractures	Blows/6-in. or RQD % 0 20 40 60 80 100	Well data
	Bkg	S-1	X		✓	a/2	SAND ORGANICS & TOPSOIL OVER VARICOLORED, STRATIFIED FINE TO MED. SANDS, TR. GRAVEL, SILTY THIN LENSES, LOOSE, MOIST TO 19' then SATURATED, VERY well sorted generally		7 11 9 8	
5	Bkg	S-2	X		✓	2 / 1.3		SP	3 3 4 4	
						2		FAN SW & ML		
10	Bkg	S-3	X		✓	1.4			2 2 5 10	
						2				
15	9.2	S-4	X		✓	1.6			9 14 15 21	
						2				
20	45	S-5	X		✓	1.6			8 10 13 16	
						2				
25	1.9	S-6	X	✓	✓	1.7	BLUISH GRAY FINE TO MED. SAND at 29'		8 12 10 10	
						2	30'			
30	Bkg	S-7	X	✓	✓	1.4	SANDY SILT PINKISH GRAY, FIRM, MOIST	ML	8 9 8 6	
							B.O.B. @ 31.0			
35										
40										
45										

*U = Thin wall tube S = Split spoon R = Rock

Bkg = Background

E.C. JORDAN

DELAWARE AIR NATIONAL GUARD, NEW CASTLE, DELAWARE			Boring no: MW-106
Client HAZWRAP			Project no: 5411-02
Contractor JOHN MATHES & ASSOC., INC.		Date started 10/4/88	Completed 10/4/88
Method HSA	Casing size 4.25" ID	PHOTOVAC 10.2	Protect'n level D
Ground el. 62.13	Soil drilled 41.0'	Rock drilled	Total depth 41.0'
Logged by P. Bolmer	Ch'd by M P Dickenson	Date 1/12/89	▽ Below grnd

Depth (ft)	Split spoon PID ambient air	Sample no. and type	Sample	CLP	GC	PEN/REC HNU headspace (ppm)	Soil/rock description	Soil class or rock fractures	Blows/6-in. or RQD % 0 20 40 60 80 100	Well data
	Bkg	S-1	X		✓	2 / 5.4	GRAVEL & SAND: LIGHT BROWN TO BROWN GRAVEL W/ SILTY SAND, DRY, LOOSE OVER ORANGE BROWN, WELL GRADED SAND, TR. SILT, TR. GRAVEL, MOIST, LOOSE	GM TO SP FOW SW	4 7 14 12	
5	Bkg	S-2	X		✓	2 / 1.6			5 5 6 8	
10	4.5	S-3	X	✓	✓	2 / 1.5			4 7 7 8	
15	7.2	S-4	X		✓	2 / 1.6	CHATTER AT 17'		6 13 19 9	
20	Bkg	S-5	X		✓	2 / 1.7	SANDY SILT TO SILTY SAND: BURNT RED TO GRAY TO WHITE SILTS & VERY FINE SANDS, TR. CLAY, STIFF, NON-PLASTIC, MOIST. STRATIFIED W/ LENSES HAVING VARYING % OF SILTS, SANDS, & CLAYS. LENSES ARE GAP GRADED TO WELL GRADED.	SM/ML FOW SP; SW	2 7 9 14	
25	Bkg	S-6	X	✓	✓	2 / 1.4			2 7 8 9	
30	Bkg	S-7	X		✓	2 / 1.9			3 8 9 14	
35	Bkg	S-8	X		✓	2 / 1.7			5 13 14 21	▽
40	Bkg	S-9	X		✓	2 / 1.6			2 8 14 20	
45							B.O.B. @ 41.0'			

*U = Thin wall tube S = Split spoon R = Rock

Bkg = Background

E.C. JORDAN

DELAWARE AIR NATIONAL GUARD, NEW CASTLE, DELAWARE			Boring no: MW-107
Client HAZWRAP			Project no: 5411-02
Contractor JOHN MATHES & ASSOC., INC.		Date started 10/4/88	Completed 10/5/88
Method HSA	Casing size 4.25" ID	PHOTOVAC 10.2	Protect'n level D
Ground el. 63.99	Soil drilled 26'8"	Rock drilled NA	Total depth 26'8"
Logged by P. Balmer	Ch'd by MP Dickenson	Date 4/12/89	▽ Below grnd

Depth (ft)	Split spoon PID ambient-air	Sample no. and type	Sample	CLP	GC	PEN/REC	HNU headspace (ppm)	Soil/rock description	Soil class or rock fractures	Blows/6-in. or RQD % (0 20 40 60 80 100)	Well data
0	Bkg	S-1	☒		✓	2 / 1.6		SAND Thin organic layer over, light brown to orange med to F. Sands, well SORTED, loose, moist to 24' then wet, Tr gravel, STRATIFIED. Some sections well graded	SP FW SW		
5	5.7	S-2	☒		✓	2 / 1.4					
10	Bkg	S-3	☒		✓	2 / 1.8					
15	Bkg	S-4	☒	✓	✓	2 / 1.6			FCW ML		
20	Bkg	S-5	☒		✓	2 / 1.9		Silty clay lens @ 19.5'			
25	Bkg	S-6	☒	✓	✓	2 / 1.6		24' Sandy Silt Burnt orange and blueish grey v.f. sandy silt, tr clay nonplastic, very stiff moist Plastic	ML		
30								B.O.B. @ 26' 8"			
35											
40											
45											

*U = Thin wall tube S = Split spoon R = Rock

Bkg = Background

E.C. JORDAN

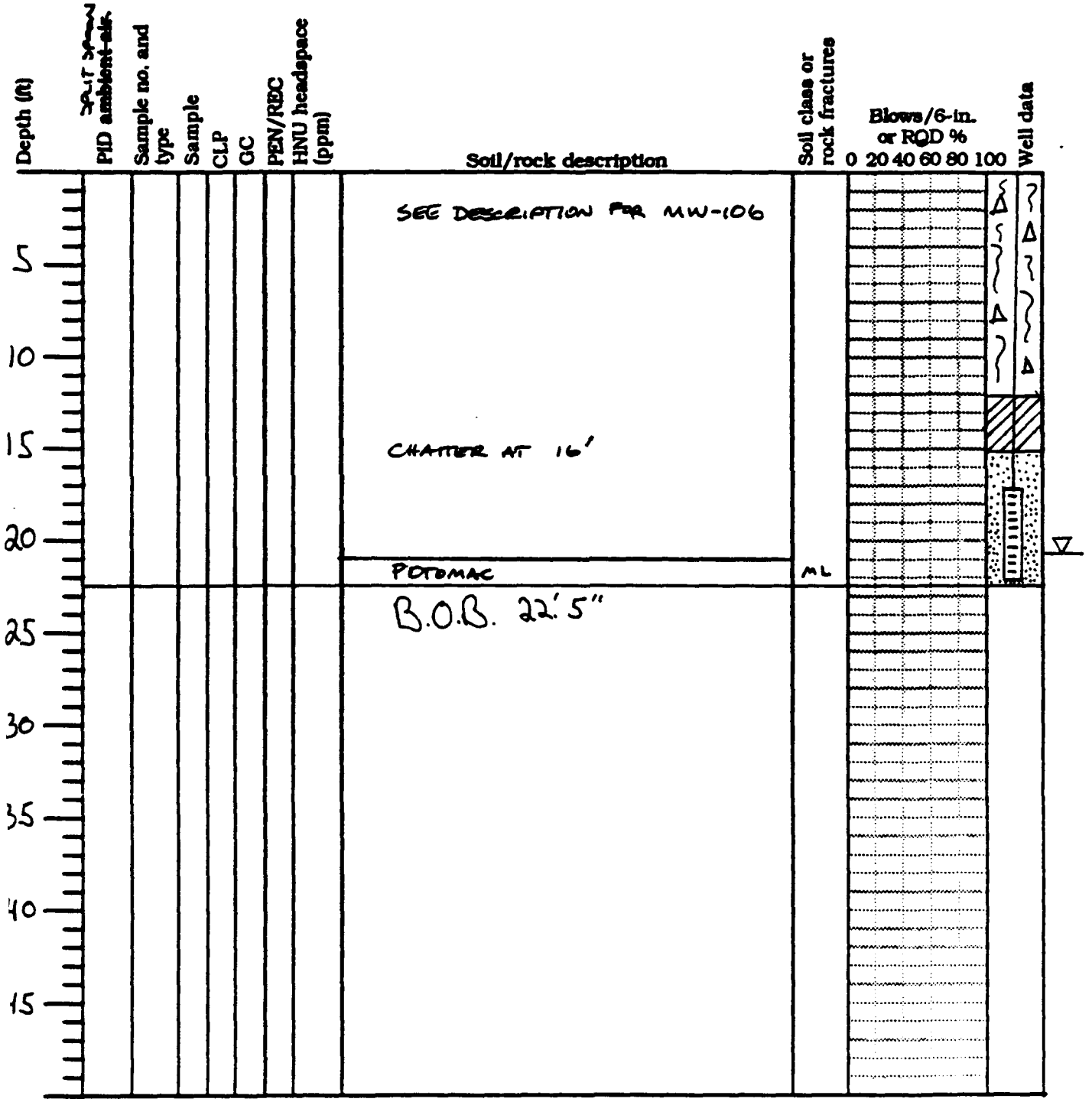
DELAWARE AIR NATIONAL GUARD, NEW CASTLE, DELAWARE			Boring no: MW-108
Client HAZWRAP			Project no: 5411-02
Contractor JOHN MATHES & ASSOC., INC.		Date started 10/3/88	Completed 10/3/88
Method HSA	Casing size 4.25" ID	PHOTOVAC 10.2	Protect'n level D
Ground el. 62.64	Soil drilled 26'	Rock drilled NA	Total depth 26'
Logged by T. Longley	Ch'd by MP Dickinson	Date 1/12/89	▽ Below grnd

Depth (ft)	PID ambient air	Sample no. and type	Sample	CLP	GC	PEN/REC HNU headspace (ppm)	Soil/rock description	Soil class or rock fractures	Blows/6-in. or RQD % 0 20 40 60 80 100	Well data
	1400	S-1			✓	12/24	SAND (FILL) OLIVE BROWN TO BLACK SAND & SILT, TR. TO LITTLE GRAVEL, TR. CLAY, FIRM MOIST	SW	8 16 13 9	
	500	S-2		✓	✓	12/24	4' (FILL TO ~4')		7 12 12 12	Δ
5	600	S-3			✓	12/24	FINE TO MED. SAND TAN FINE TO MED. SAND, LITTLE GRAVEL IN ZONES, MOIST TO 19'		4 8 8 7	
	600	S-4		✓	✓	12/24	THEN WET, LOOSE, WELL SORTED IN LENSES	SP/SW	6 8 10 10	Δ
	800	S-5			✓	12/24			5 7 7 9	
10	400	S-6			✓	12/24	OCCASIONAL DARK PETROLEUM STAINED LENSES		10 10 10 10	Δ
	50	S-7			✓	12/24			5 8 8 7	
15	800	S-8			✓	12/24	CLAY LENSE AT 17'	FEW ML	5 8 9 5	
	838	S-9				12/24			8 6 10 11	
	700	S-10		✓	✓	12/24			10 10 14 13	▽
20	Bkg	S-11			✓	12/24	21'		5 7 6 5	
	Bkg	S-12			✓	12/24	SANDY SILT RED TO ORANGE TO BLUE GRAY V. FINE SANDY SILT, TR CLAY, FIRM, VARICOLORED LENSES OF VARYING THICKNESSES, SOME SECTIONS SLIGHTLY PLASTIC	ML	7 10 13 14	
25	Bkg	S-13			✓	12/24			5 7 7 6	
							B.O.B. @ 26'			
30										
35										

*U = Thin wall tube S = Split spoon R = Rock

E.C. JORDAN

DELAWARE AIR NATIONAL GUARD, NEW CASTLE, DELAWARE			Boring no: MW-109
Client HAZWRAP			Project no: 5411-02
Contractor JOHN MATHES & ASSOC., INC.		Date started 10/19/88	Completed 10/19/88
Method HSA	Casing size 4.25" ID	PHOTOVAC 10.2	Protect'n level D
Ground el. 63.13	Soil drilled 22'.5"	Rock drilled N/A	Total depth 22'.5"
Logged by P. Balmer	Ch'd by MP Dickenson	Date 1/12/89	▽ Below grnd



*U = Thin wall tube S = Split spoon R = Rock

E.C. JORDAN

DELAWARE AIR NATIONAL GUARD, NEW CASTLE, DELAWARE			Boring no: MW-110
Client HAZWRAP			Project no: 5411-02
Contractor JOHN MATHES & ASSOC., INC.		Date started 10/21/88	Completed 10/21/88
Method HSA	Casing size 4.25" ID	PHOTOVAC 10.2	Protect'n level D
Ground el. 62.51	Soil drilled 29'3"	Rock drilled NA	Total depth 29'3"
Logged by P. Bauer	Ch'd by MP Dickinson	Date 4/5/89	▽ Below grnd

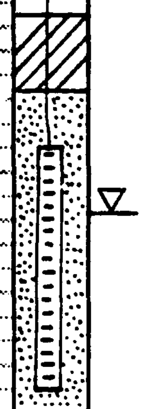
Depth (ft)	Split spoon PID ambient-air	Sample no. and type	Sample	CLP	GC	PEN/REC HNU headspace (ppm)	Soil/rock description	Soil class or rock fractures	Blows/6-in. or RQD % 0 20 40 60 80 100	Well data
5							SEE DESCRIPTION FOR MW-106			
10										
15										
20										▽
25										
30							B.O.B. 29'3"			
35										
40										
45										

*U = Thin wall tube S = Split spoon R = Rock

E.C. JORDAN

DELAWARE AIR NATIONAL GUARD, NEW CASTLE, DELAWARE			Boring no: MW-111 offset
Client HAZWRAP			Project no: 5411-02
Contractor JOHN MATHES & ASSOC., INC.		Date started 10/24/88	Completed 10/24/88
Method HSA	Casing size 4.25" ID	PHOTOVAC 10.2	Protect'n level D
Ground el. 66.26	Soil drilled 49'	Rock drilled N/A	Total depth 49'
Logged by T. Langley	Ch'd by M P Dickenson	Date 1/12/89	∇ Below grnd

Depth (ft)	PID ambient air	Sample no. and type	Sample	CLP	GC	PEN/REC	HNU headspace (ppm)	Soil/rock description	Soil class or rock fractures	Blows/6-in. or RQD % 0 20 40 60 80 100	Well data
								SEE MW-111 FOR SOIL DESCRIPTION. NO SAMPLING CONDUCTED ON THIS BORING			
5											
10											
15								CHATTER 14'-18'			
20											
25											
30											
35											
40											∇
45											
								B.O.B. @ 49'			



*U = Thin wall tube S = Split spoon R = Rock

E.C. JORDAN

DELAWARE AIR NATIONAL GUARD, NEW CASTLE, DELAWARE			Boring no: MW-111
Client HAZWRAP			Project no: 5411-02
Contractor JOHN MATHES & ASSOC., INC.		Date started 10/12/88	Completed 10/13/88
Method HSA	Casing size 4.25" ID	PHOTOVAC 10.2	Protect'n level D
Ground el. 66.36	Soil drilled 46'	Rock drilled NA	Total depth 46'
Logged by T. Longley	Ch'd by MP Dickerson	Date 4/12/89	▽ Below grnd

Depth (ft)	PID Specs ambient air	Sample no. and type	Sample	CLP	GC	PEN/REC HNU headspace (ppm)	Soil/rock description	Soil class or rock fractures	Blows/6-in. or RQD % 0 20 40 60 80 100	Well data
	Bkg	S-1	☒		✓	2/1.6	SAND ORGANICS & TOPSOIL OVER dull BRN. to ORANGE BRN. V.F. SANDY SILT, DESICCATED, STIFF, dry; OVER BRIGHT ORANGE BRN, WELL GRADED, FINE TO COARSE SAND, TR. SILT, TR. GRAVEL, LOOSE, MOIST TO 39' THEN SATURATED. VARICOLORED	ML	8 12 14 5	
5	Bkg	S-2	☒		✓	2/1.5			6 7 9 11	
10	Bkg	S-3	☒		✓	2/1.7		SP few Silt/Gravel	6 9 9 9	
15	Bkg	S-4	☒			25/11	14' — — Throughout profile. — — — VERY COBBLY at 13' HARD DRILLING 13'–18'		100/0.25'	
20	Bkg	S-5	☒		✓	2/1.1	POSSIBLE POTOMAC CONTACT AT 14'. DEEP BURNT REDDISH BROWN SILTY V. FINE SAND, V. WELL SORTED, MOST LOOSE, FEW CEMENTED LENSES.	SM/ML	6 10 13 9	
25	Bkg	S-6	☒		✓	2/2		SP	4 6 10 6	
30	Bkg	S-7	☒		✓	2/2	AT 29', SILT, TR CLAY, TR. V.F. SAND, FIRM TO STIFF, CRUMBLY SILTY SAND LENSES.	ML	4 8 10 14	
35	400	S-8	☒		✓	2/1.5	SLOW DRILLING 29'-34' AT 34', GRAY & TAN V. CLEAN FINE SAND, V. WELL SORTED. SMELLS PRODUCT & SOLVENTS FROM 34' ON.	SP	12 19 20 22	
40	550	S-9	☒	✓	✓	2/1.5			9 14 16 23	▽
45	—	S-10	☒			2/0				
							B.O.B @ 46'			

*U = Thin wall tube S = Split spoon R = Rock

Bkg = Background

E.C. JORDAN

DELAWARE AIR NATIONAL GUARD, NEW CASTLE, DELAWARE			Boring no: MW-112
Client HAZWRAP			Project no: 5411-02
Contractor JOHN MATHES & ASSOC., INC.		Date started 10/12/88	Completed 10/12/88
Method HSA	Casing size 4.25" ID	PHOTOVAC 10.2	Protect'n level D
Ground el. 61.21	Soil drilled 41'	Rock drilled NA	Total depth 41'
Logged by T. LONGLEY	Ch'd by MPDuKelow	Date 1/12/89	▽ Below grnd

Depth (ft)	Spoon/ ambient air PID	Sample no. and type	Sample	CLP	GC	PEN/REC HNU headspace (ppm)	Soil/rock description	Soil class or rock fractures	Blows/6-in. or RQD % 0 20 40 60 80 100	Well data
	Bkg	S-1	X		✓	2/1.7	TOPSOIL & DISTURBED SAND TO 2'		3 8 10 10	
5	Bkg	S-2	X		✓	2/1.6	SANDS STRATIFIED FINE TO COARSE SANDS WITH VARYING AMOUNTS OF SORTING THROUGHOUT. COLORS ARE GENERALLY BRIGHT ORANGE BROWN TO YELLOWISH BROWN; TRACE OF GRAVEL; LOOSE; MOIST TO 34', THEN SATURATED.	SW TO SP TO SM	3 6 6 6	
10	Bkg	S-3	X		✓	2/1.8			5 6 7 7	
15	Bkg	S-4	X		✓	2/1.7	HIGH CHATTER TO AUGERS 15'-18.5'		8 15 16 15	
20	Bkg	S-5	X		✓	2/1.7	THIN (1" TO 2") FEW SILT LENSES THROUGHOUT; FIRM; SOME SAND LENSES HAVE TRACE TO LITTLE SILT	FEW ML	10 13 12 14	
25	10	S-6	X		✓	2/2	BLEACHED F. TO M. SAND LAYERS AT 24' TO 25' AND AT 30'		8 12 15 17	
30	11	S-7	X		✓	2/2	BORING STAYED COMPLETELY WITHIN COLUMBIA FORMATION		8 12 21 37	
35	55	S-8	X		✓	2/1.3	UNNATURAL LOOKING BLACK BANDING IN TAN TO BRIGHT ORANGE BROWN, F. & M. SANDS AT 34'.		12 16 16 18	▽
40	55	S-9	X		✓	2/1.7	SANDS ARE MORE COMPACT AT BOTTOM		10 12 24 31	
							B.O.B. @ 41'			
45										

*U = Thin wall tube S = Split spoon R = Rock

Bkg = BACKGROUND

E.C. JORDAN

DELAWARE AIR NATIONAL GUARD, NEW CASTLE, DELAWARE			Boring no: P-110
Client HAZWRAP			Project no: 5411-02
Contractor JOHN MATHES & ASSOC., INC.		Date started 10/13/88	Completed 10/13/88
Method HSA	Casing size 4.25" ID	PHOTOVAC 10.2	Protect'n level D
Ground el. 64.34	Soil drilled 41'	Rock drilled NA	Total depth 41'
Logged by T. Longley	Ch'd by MP Dickenson	Date 1/12/89	▽ Below grnd

Depth (ft)	PID ambient air / Split spoon	Sample no. and type	Sample	CLP	GC	PEN/REC	HNU headspace (ppm)	Soil/rock description	Soil class or rock fracture	Blows/6-in. or RQD % (0 20 40 60 80 100)	Well data
	Bkg	S-1	X		✓	2/16		SAND ORGANICS 1', TOPSOIL OVER ORANGE BRN. TO DULL ORANGE BRN FINE TO MED. SAND, TR. SILT MIXED W/ SAND OR IN THIN LENSES, TR. GRAVEL, FIRM TO STIFF, MOIST TO 34' THEN SATURATED, VERY WELL SORTED, STRATIFIED.		6 6 8 14	
5	Bkg	S-2	X		✓	2/1.5			SP	5 6 6 6	
10	Bkg	S-3	X		✓	2/1.5			FEW SM/ML	5 6 7 9	
15	Bkg	S-4	X		✓	1.5/1.5				4 6 6 9	
20	Bkg	S-5	X		✓	2/2.2		CHATTER AT 23'	SP FEW SM	3 10 8 8	
25	Bkg	S-6	X		✓	2/2				9 10 12 17	
30	Bkg	S-7	X		✓	2/2				8 14 18 19	
35	Bkg	S-8	X		✓	2/1.6		AT 34', COLOR CHANGES TO BLUISH GRAY F. SAND, TR. SILT, FIRM, W/ TAN V. FINE SAND LENSES	SM	5 13 10 13	▽
40	Bkg	S-9	X		✓	2/1.4				4 10 16 18	
								B.O.B. @ 41'			
45											

*U = Thin wall tube S = Split spoon R = Rock

Bkg = Background

E.C. JORDAN

DELAWARE AIR NATIONAL GUARD, NEW CASTLE, DELAWARE				Boring no: P-112
lent HAZWRAP				Project no: 5411-02
ntractor JOHN MATHES & ASSOC., INC.			Date started 10/13/88	Completed 10/13/88
thod HSA	Casing size 4.25" ID		PHOTOVAC 10.2	Protect'n level D
ound el. 64.35'	Soil drilled 31'		Rock drilled NA	Total depth 31'
gged by P. Balmer	Ch'd by MP Dickenson		Date 1/12/89	▽ Below grnd

Spoon depth	PID ambient air	Sample no. and type	Sample	CLP	GC	PEN/REC	HNU headspace (ppm)	Soil/rock description	Soil class or rock fractures	Blows/6-in. or RQD % (0 20 40 60 80 100)	Well data
	Bkg	S-1	X		✓	2/1.3		SAND ORGANICS & TOPSOIL OVER VARI-COLORED FINE TO MED. SANDS, TR. GRAVEL IN PLACES, TRACE OF SILT, DEP. W/ depth, WELL SORTED, LOOSE, Then FIRM BELOW 19'		4 10 13 14	
5	Bkg	S-2	X		✓	2/1.5			SP	4 7 6 10	
10	Bkg	S-3	X		✓	2/1.7			Few SW/SM	4 7 7 9	
15	Bkg	S-4	X		✓	2/1.2				4 9 10 10	
20	Bkg	S-5	X		✓	2/1.9				4 14 10 18	
25	Bkg	S-6	X		✓	2/1.0		SATURATED BELOW 24.5'		4 10 6 12	▽
30	Bkg	S-7	X		✓	2/1.5		25' SANDY SILT BURNT RED TO BLUISH GRAY SILT, TR. CLAY, WITH V.F. SAND, SLIGHTLY PLASTIC	ML	4 7 11 16	
								B.O.B. @ 31.0'			
35											
40											
45											

*U = Thin wall tube S = Split spoon R = Rock

Bkg = Background

E.C. JORDAN

DELAWARE AIR NATIONAL GUARD, NEW CASTLE, DELAWARE			Boring no: P-112 offset
Client HAZWRAP			Project no: 5411-02
Contractor JOHN MATHES & ASSOC., INC.		Date started 10/24/88	Completed 10/24/88
Method HSA	Casing size 4.25" ID	PHOTOVAC 10.2	Protect'n level D
Ground el. 64.51	Soil drilled 34' 7"	Rock drilled NA	Total depth 34' 7"
Logged by	Ch'd by MP Dickenson	Date 1/12/89	▽ Below grnd

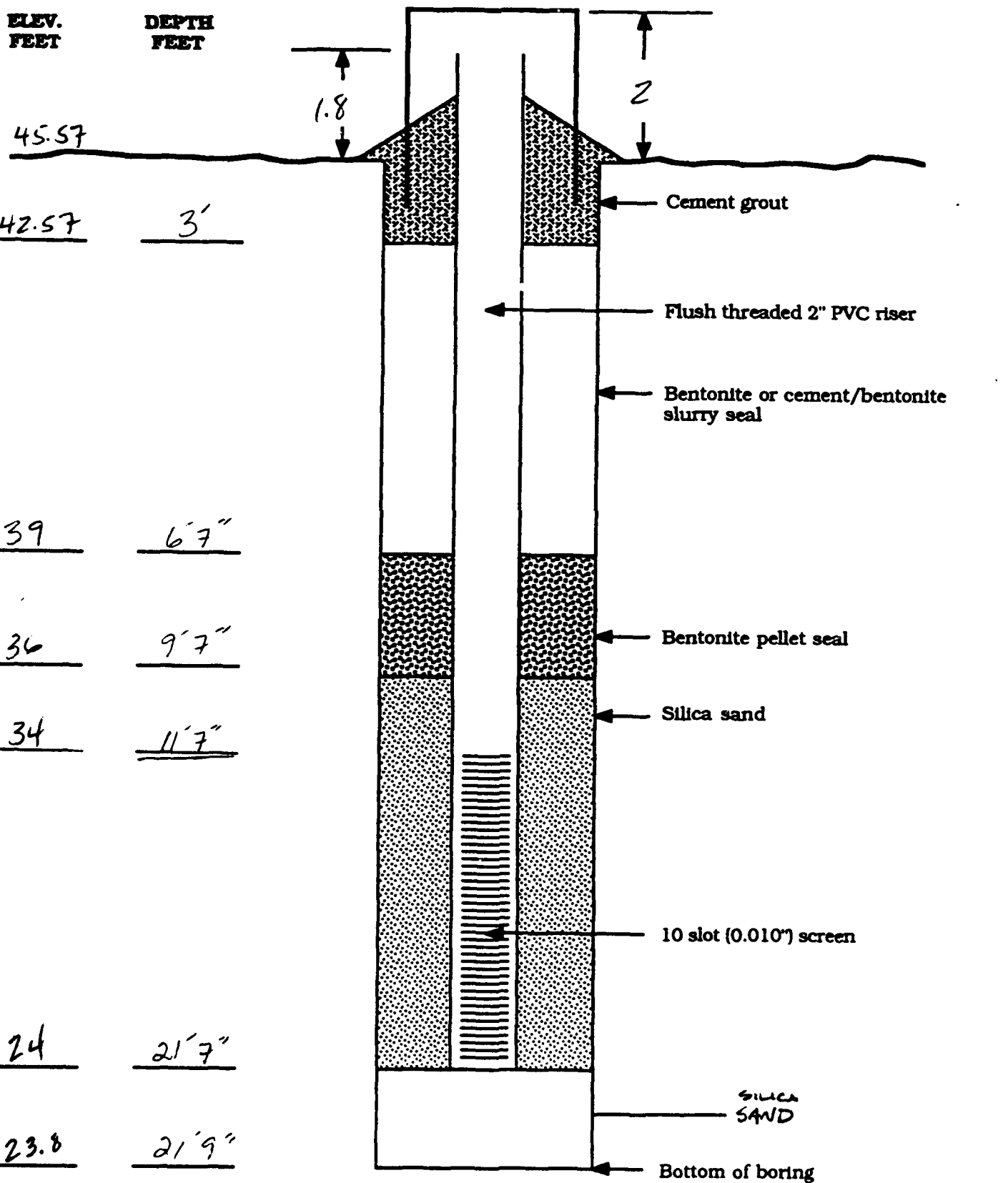
Depth (ft)	PID ambient air	Sample no. and type	Sample	CLP	GC	PEN/REC	HNU headspace (ppm)	Soil/rock description	Soil class or rock fractures	Blows/6-in. or RQD % 0 20 40 60 80 100	Well data
5								BORING WAS DRILLED W/OUT SAMPLING SEE P-112 BORING DESCRIPTION			
10								GRAVEL ZONE 10'-12'			
15								CHATTER AT 17'			
20											
25											▽
30								DRILLER SAID HIT CLAY @ ~30'			
35								B.O.B. 34'7"			
40											
45											

*U = Thin wall tube S = Split spoon R = Rock

E.C. JORDAN

WELL INSTALLATION DETAILS

Project no.	5411-02	**Project name**	DANGB	**Well no.**	MW-101
Installed by	MATHES/JORDAN	**Date installed**	10-5-88	**Boring diameter**	NOM. 8"
Well diameter	2"	**Well material**	SCH 40 PVC	**Backfill material**	MARIE SAND

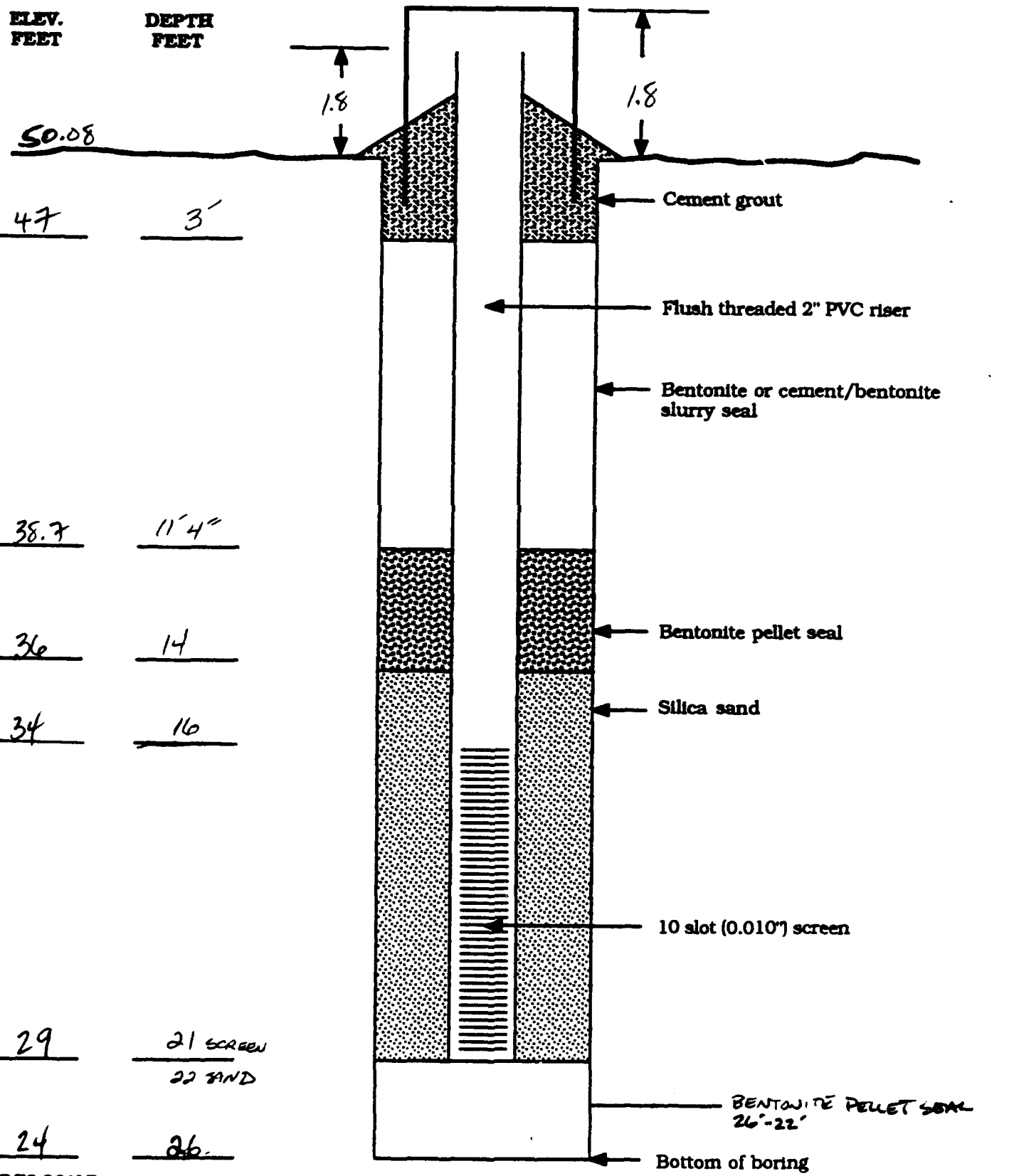


NOT TO SCALE

E.C. JORDAN

WELL INSTALLATION DETAILS

Project no.	5411-02	**Project name**	DANGB	**Well no.**	MW-102
Installed by	MATHES/JORDAN	**Date installed**	10.6.88	**Boring diameter**	NOM. 8"
Well diameter	2"	**Well material**	SCH 40 PVC	**Backfill material**	MORIE SAND

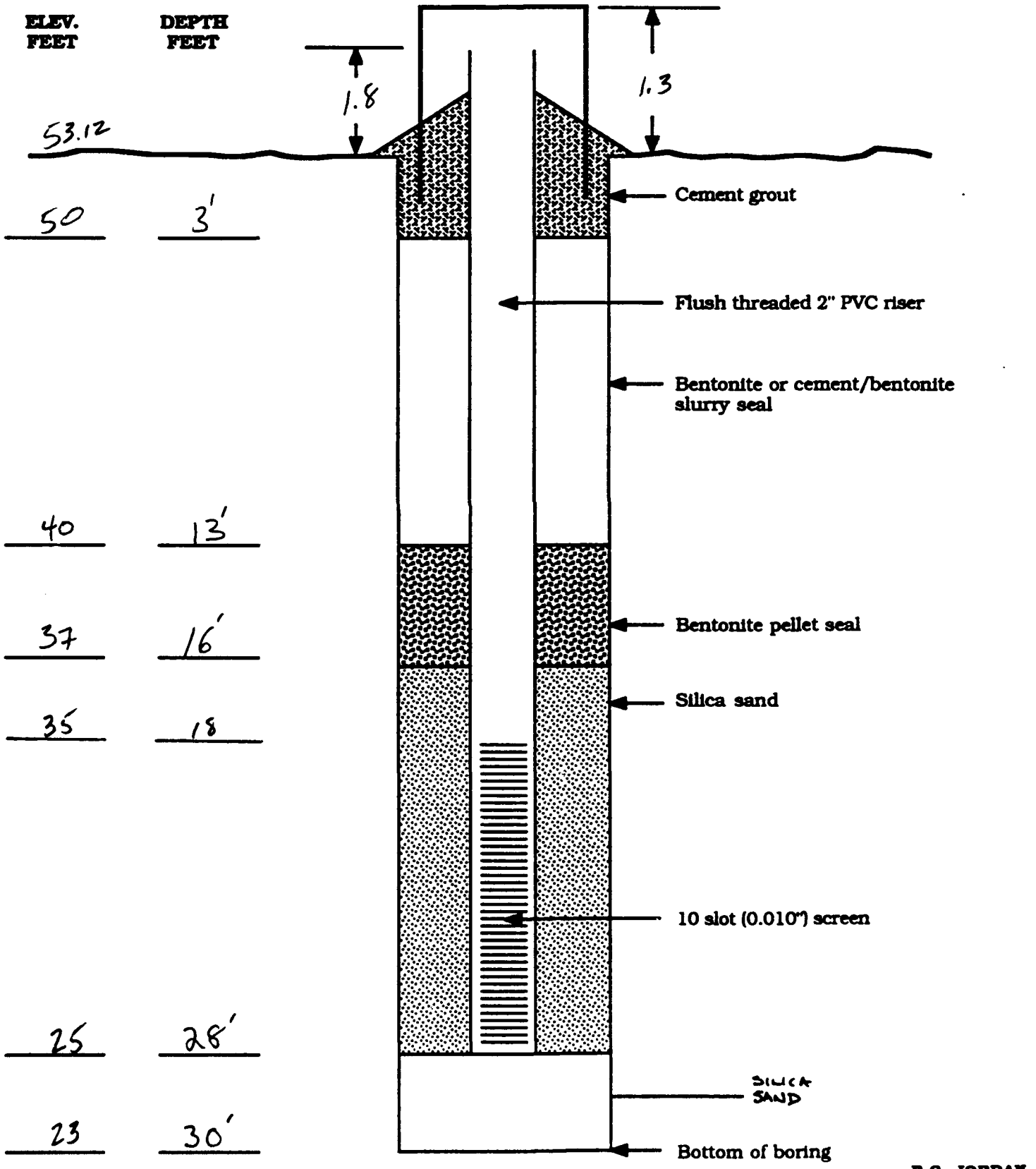


NOT TO SCALE

E.C. JORDAN

WELL INSTALLATION DETAILS

Project no.	**5411-02**	**Project name**	**DANGB**	**Well no.**	MW-103
Installed by		**Date installed**		**Boring diameter**	**NOM. 8"**
Well diameter	**2"**	**Well material**	**SCH 40 PVC**	**Backfill material**	

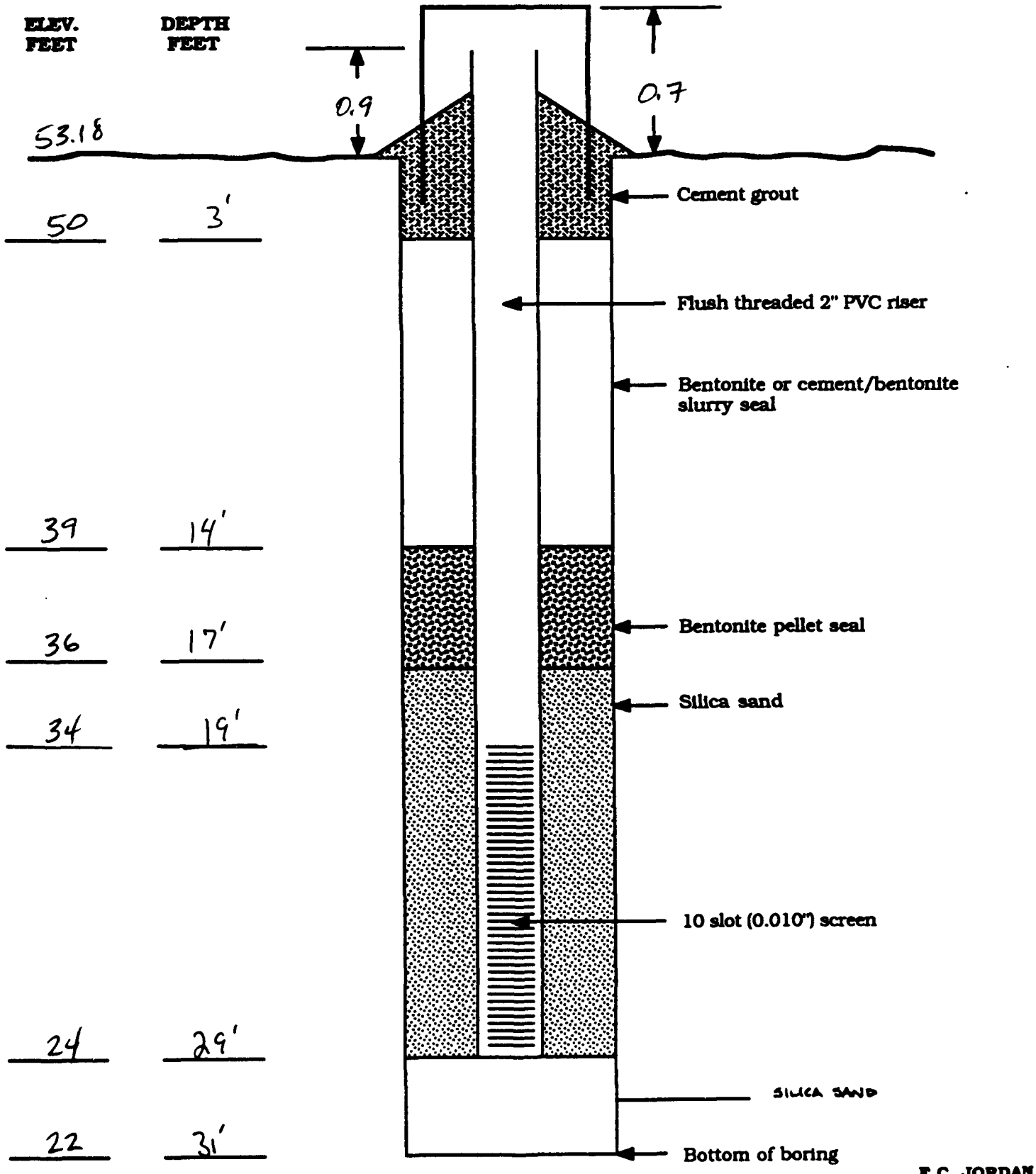


NOT TO SCALE

E.C. JORDAN

WELL INSTALLATION DETAILS

Project no.	5411-02	**Project name**	DANGB	**Well no.**	MW-104
Installed by	Mathes/Jordan	**Date installed**	10/17/88	**Boring diameter**	NOM. 8"
Well diameter	2"	**Well material**	SCH 40 PVC	**Backfill material**	Morie Sand

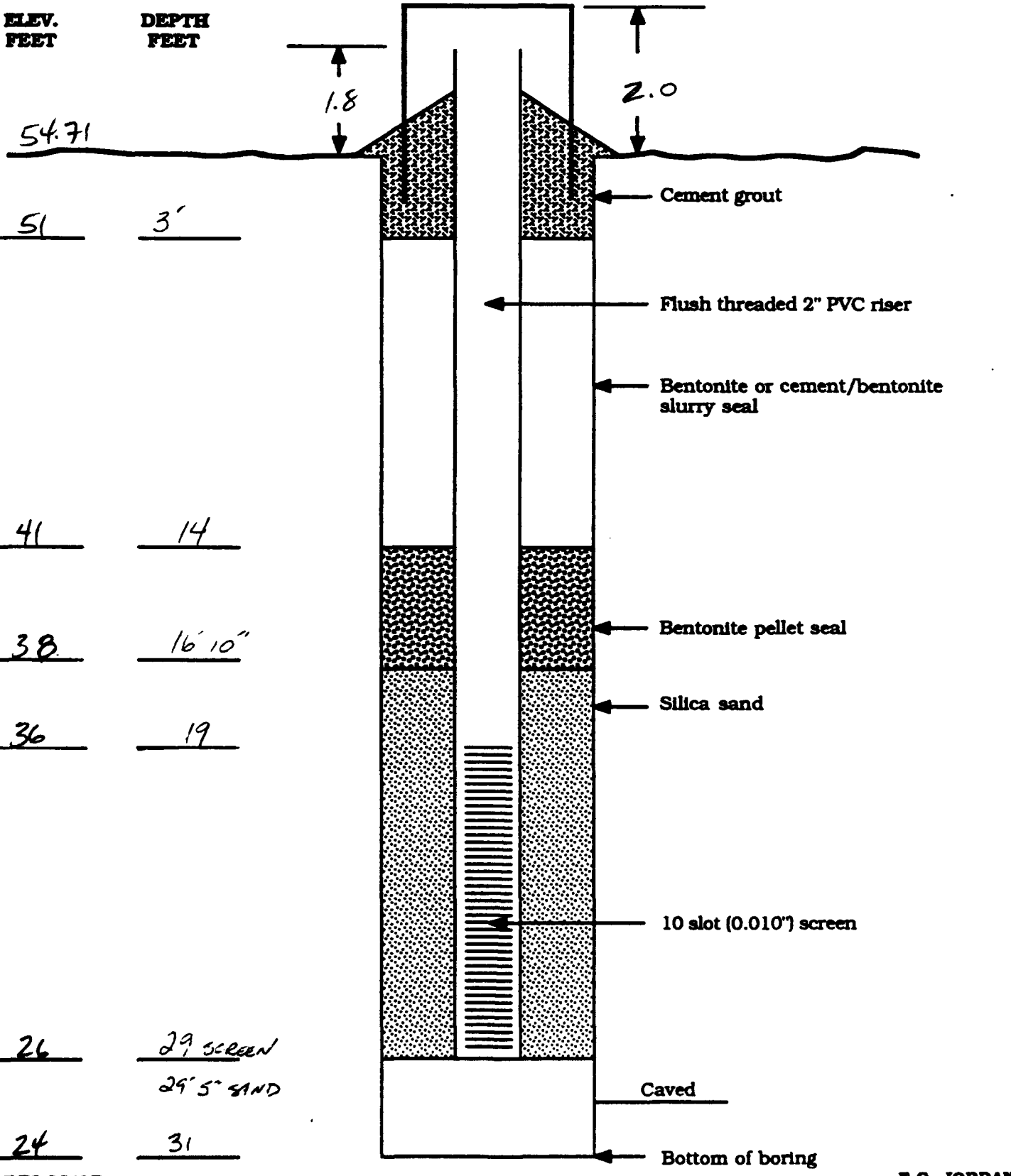


NOT TO SCALE

E.C. JORDAN

WELL INSTALLATION DETAILS

Project no.	5411-02	**Project name**	DANGB	**Well no.**	MW-105
Installed by	MATHES/JORDAN	**Date installed**	10-7-88	**Boring diameter**	NOM. 8"
Well diameter	2"	**Well material**	SCH 40 PVC	**Backfill material**	MORIE SAND

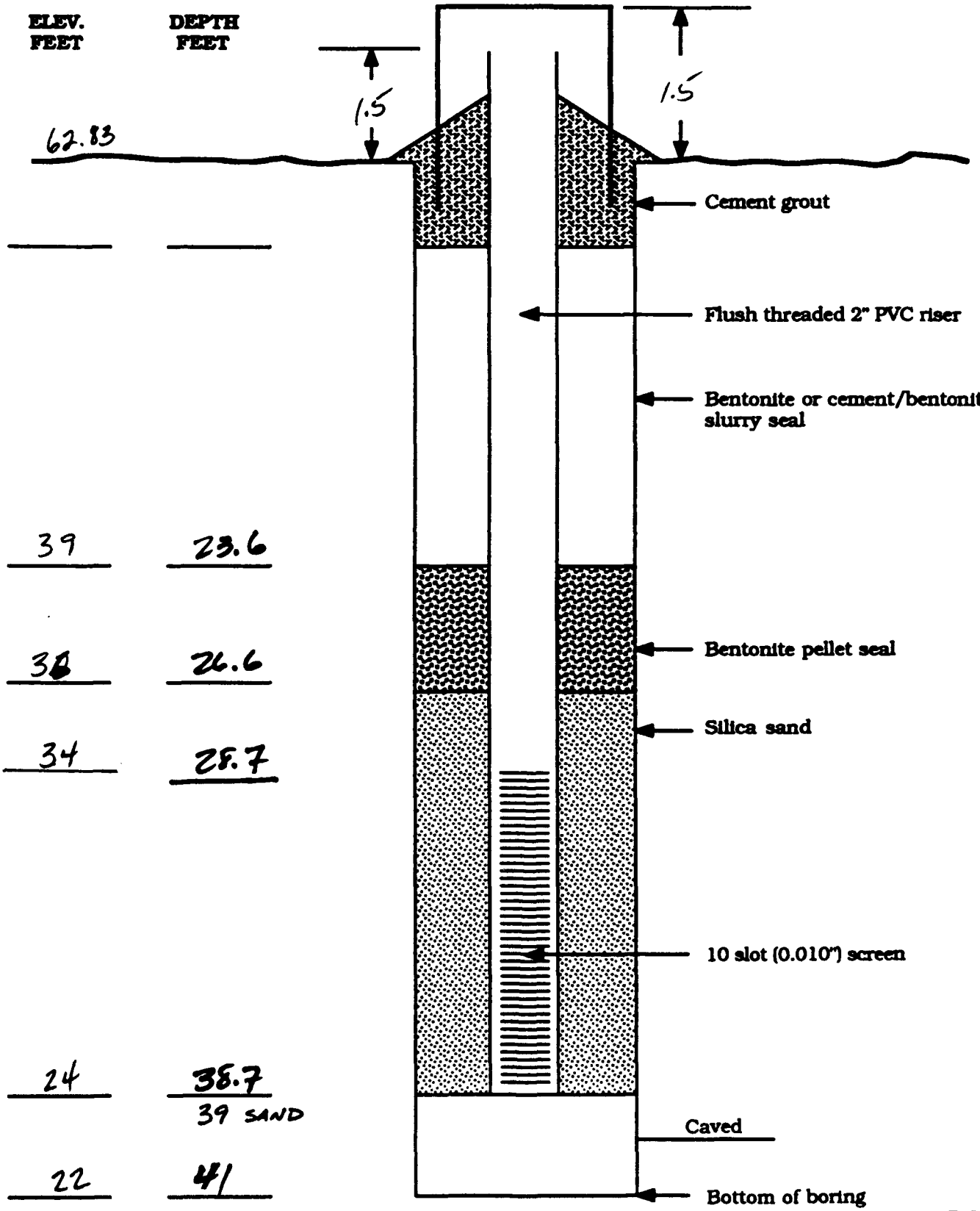


NOT TO SCALE

E.C. JORDAN

WELL INSTALLATION DETAILS

Project no.	5411-02	Project name	DANGB	Well no.	MW-106
Installed by	Mathes	Date installed	12-4-88	Boring diameter	NOM. 8"
Well diameter	2"	Well material	SCH 40 PVC	Backfill material	Marie SAND

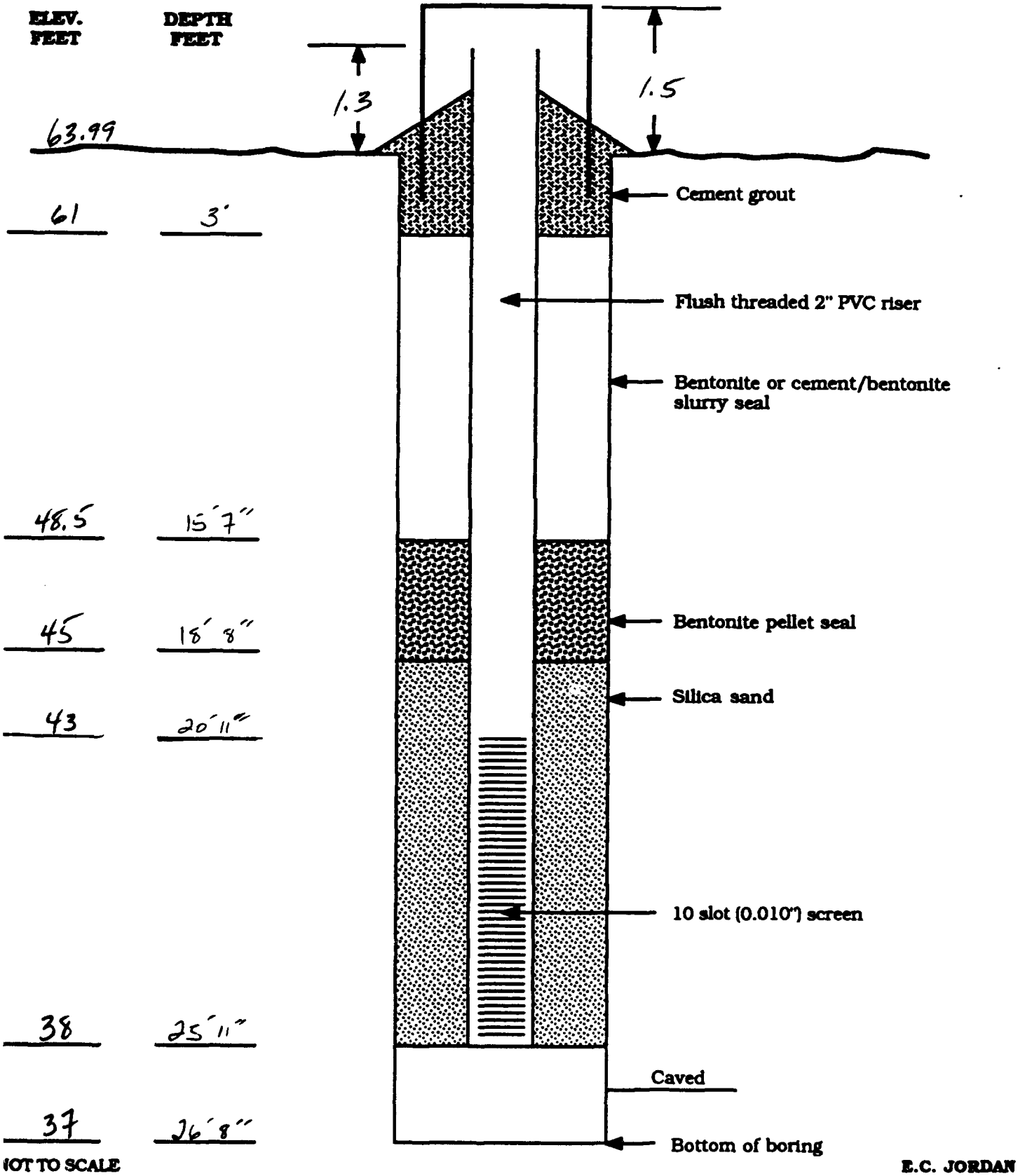


NOT TO SCALE

E.C. JORDAN

WELL INSTALLATION DETAILS

Project no.	**5411-02**	**Project name**	**DANGB**	**Well no.**	MW-107
Installed by	MATHES/JORDAN	**Date installed**	10-5-88	**Boring diameter**	**NOM. 8"**
Well diameter	**2"**	**Well material**	**SCH 40 PVC**	**Backfill material**	MORIE SAND

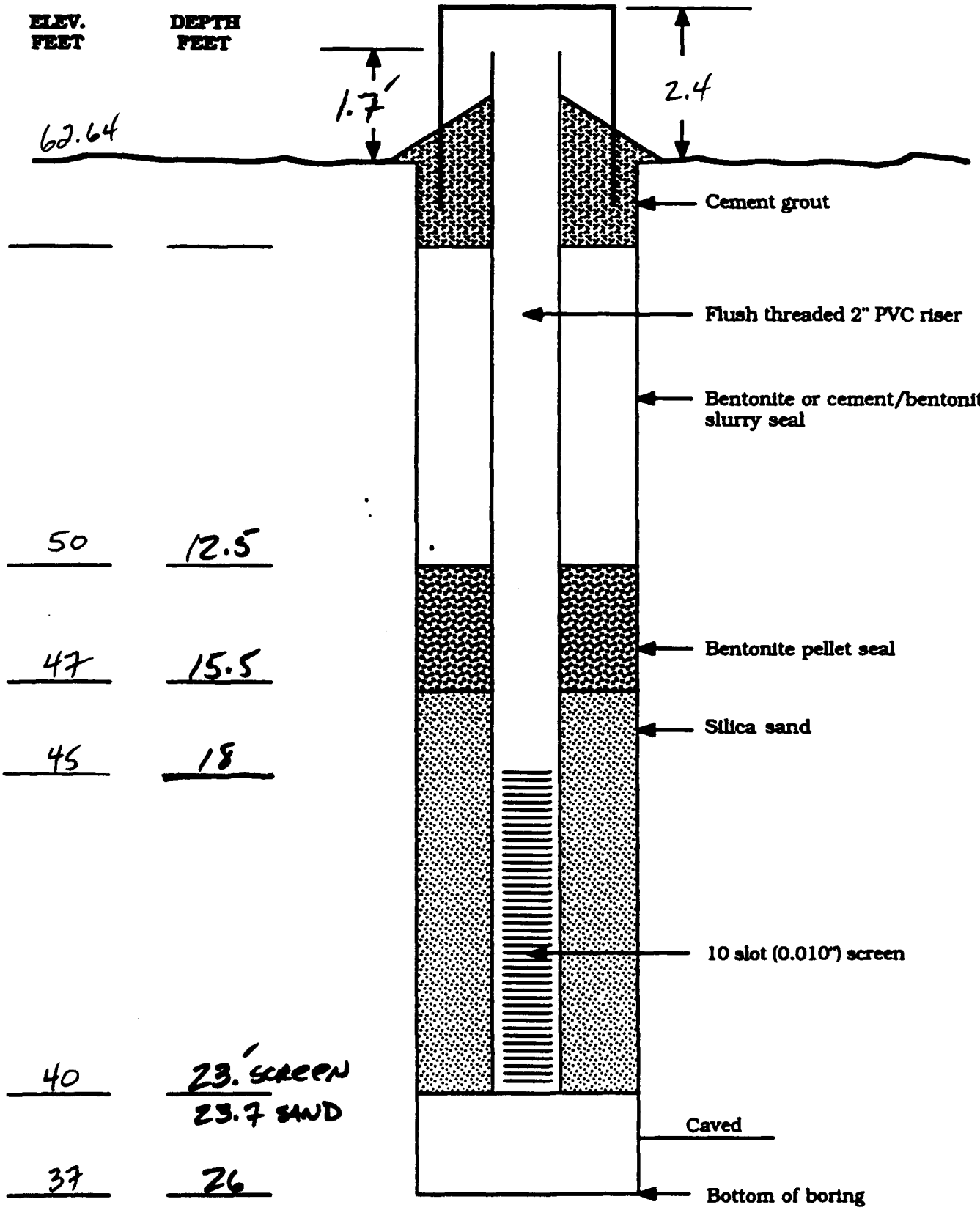


NOT TO SCALE

E.C. JORDAN

WELL INSTALLATION DETAILS

Project no.	5411-02	Project name	DANGB	Well no.	MW-108
Installed by	MATHES	Date installed	10-4-88	Boring diameter	NOM. 8"
Well diameter	2"	Well material	SCH 40 PVC	Backfill material	MORIE SAND

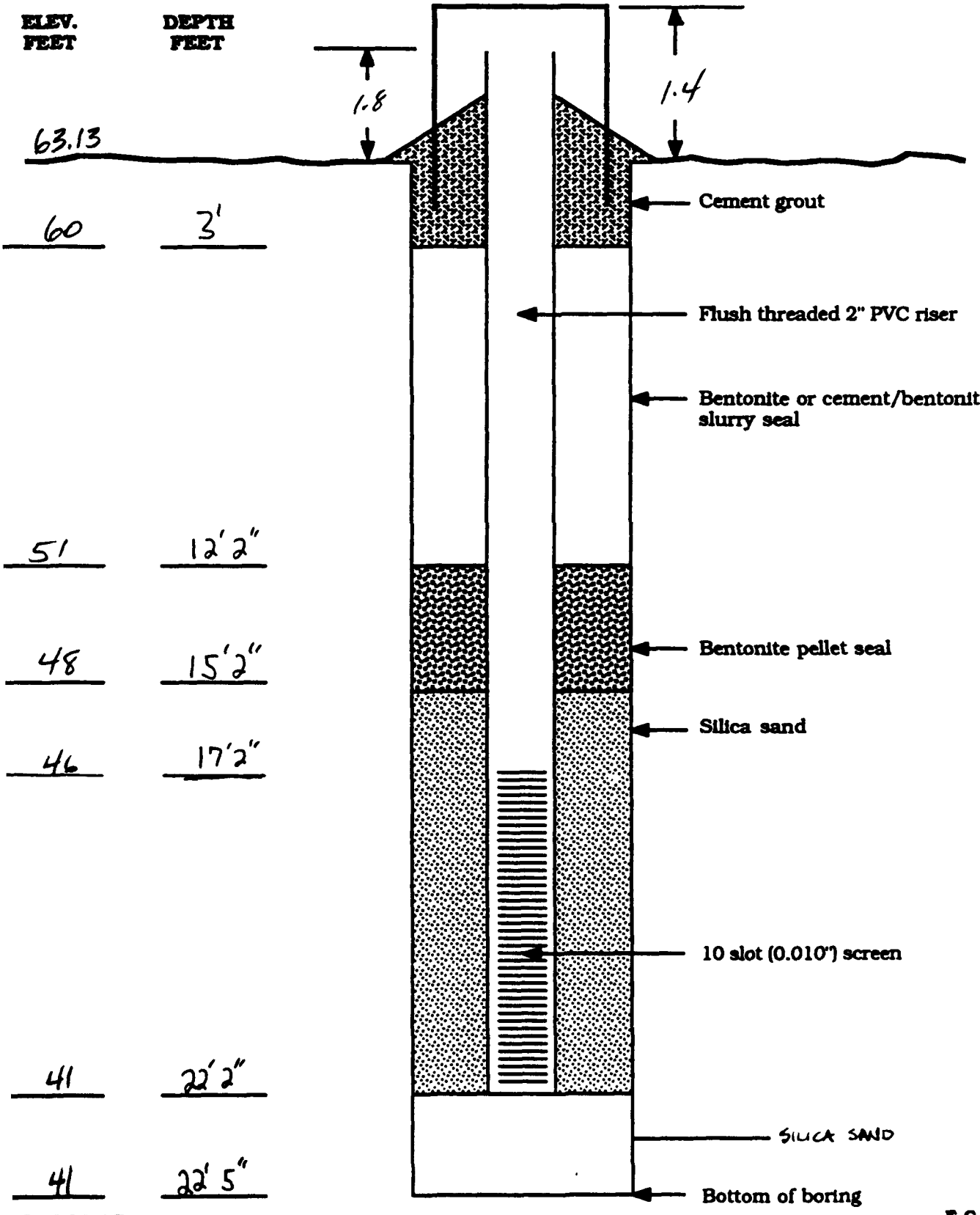


NOT TO SCALE

E.C. JORDAN

WELL INSTALLATION DETAILS

Project no. 5411-02	**Project name** DANGB	**Well no.** MW-109
Installed by Mathes / Jordan	**Date installed** 10/19/88	**Boring diameter** NOM. 8"
Well diameter 2"	**Well material** SCH 40 PVC	**Backfill material** Morie Sand



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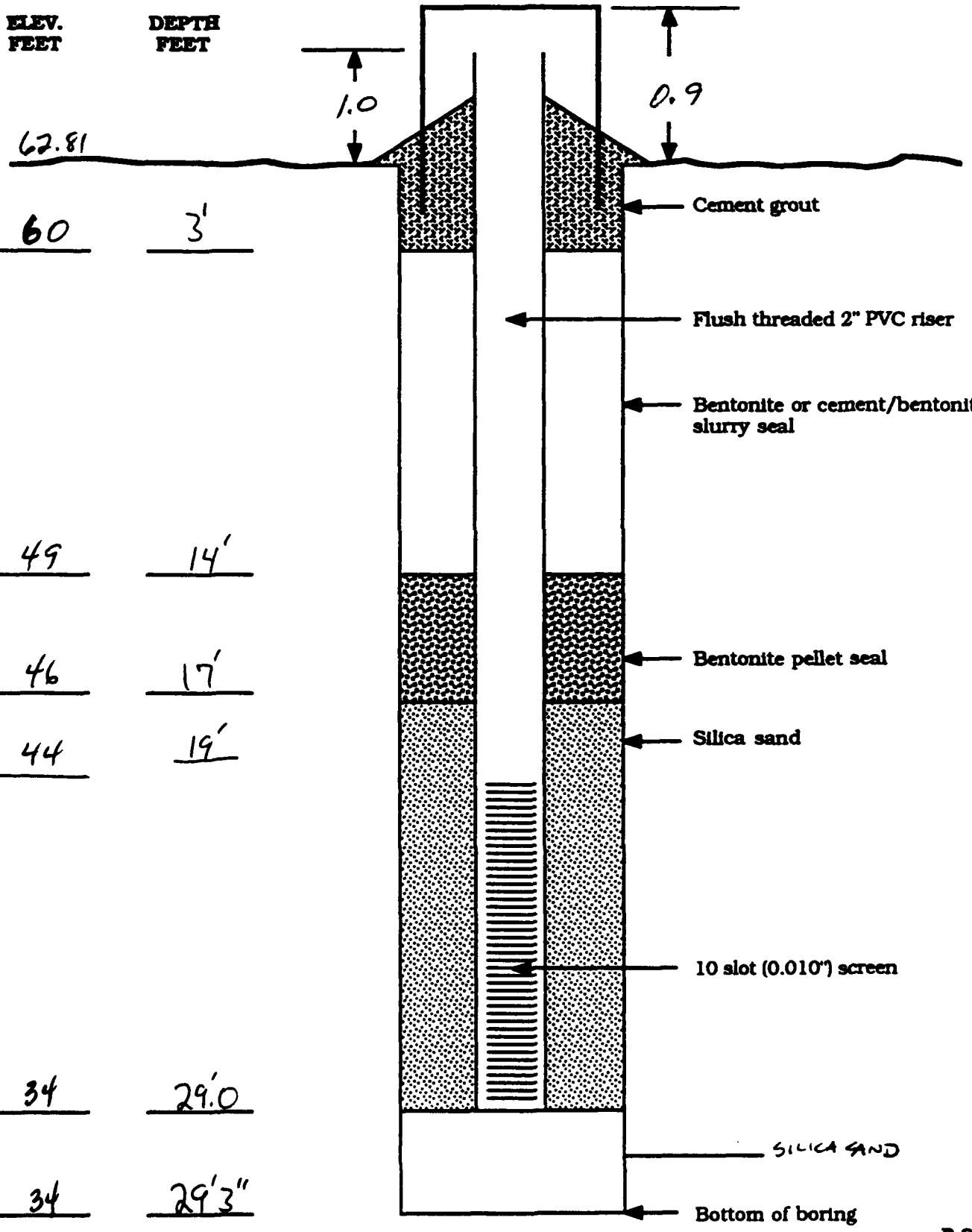
E.C. JORDAN

WELL INSTALLATION DETAILS

Project no.	5411-02	**Project name**	DANGB	**Well no.**	MW-110
Installed by	Miles / Jordan	**Date installed**	10/21/88	**Boring diameter**	NOM. 8"
Well diameter	2"	**Well material**	SCH 40 PVC	**Backfill material**	Morie Sand

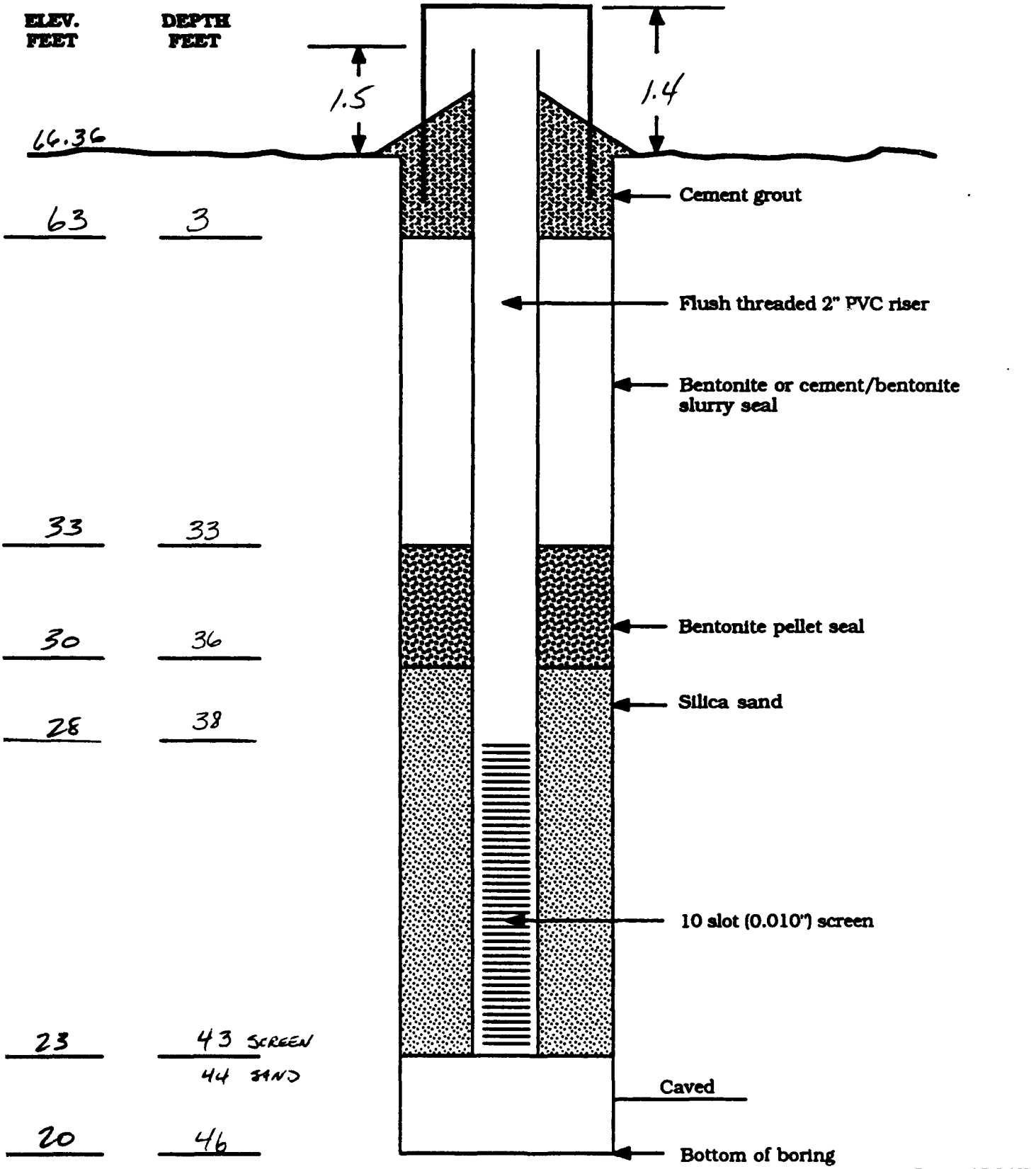


NOT TO SCALE

E.C. JORDAN

WELL INSTALLATION DETAILS

Project no.	5411-02	**Project name**	DANGB	**Well no.**	MW-111
Installed by	MATHES/JORDAN	**Date installed**	10·12·88	**Boring diameter**	NOM. 8"
Well diameter	2"	**Well material**	SCH 40 PVC	**Backfill material**	MORIG SAND

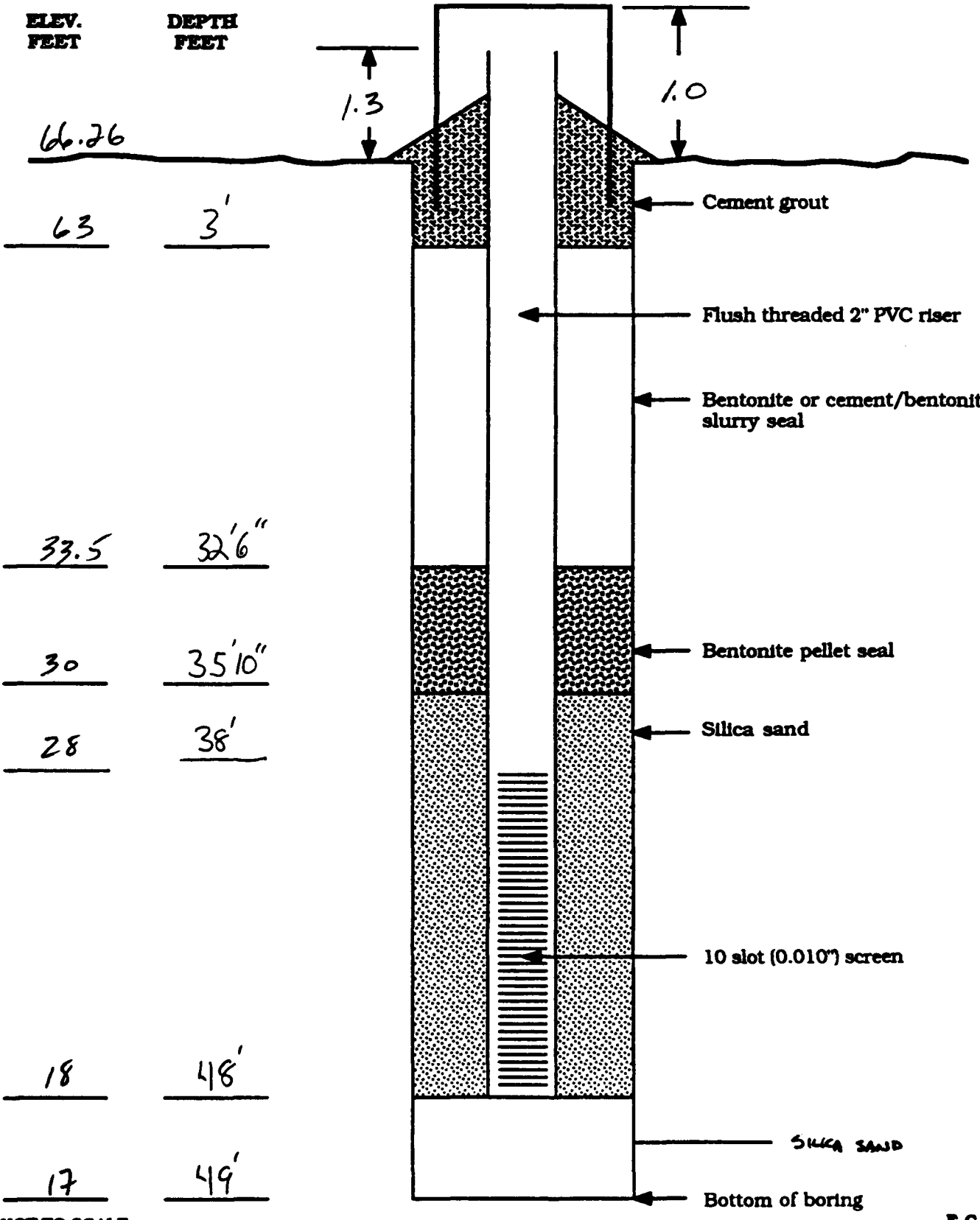


NOT TO SCALE

E.C. JORDAN

WELL INSTALLATION DETAILS

Project no.	5411-02	**Project name**	DANGB	**Well no.**	MW-111 offset
Installed by		**Date installed**	10/24/88	**Boring diameter**	NOM. 8"
Well diameter	2"	**Well material**	SCH 40 PVC	**Backfill material**	Morie Sand

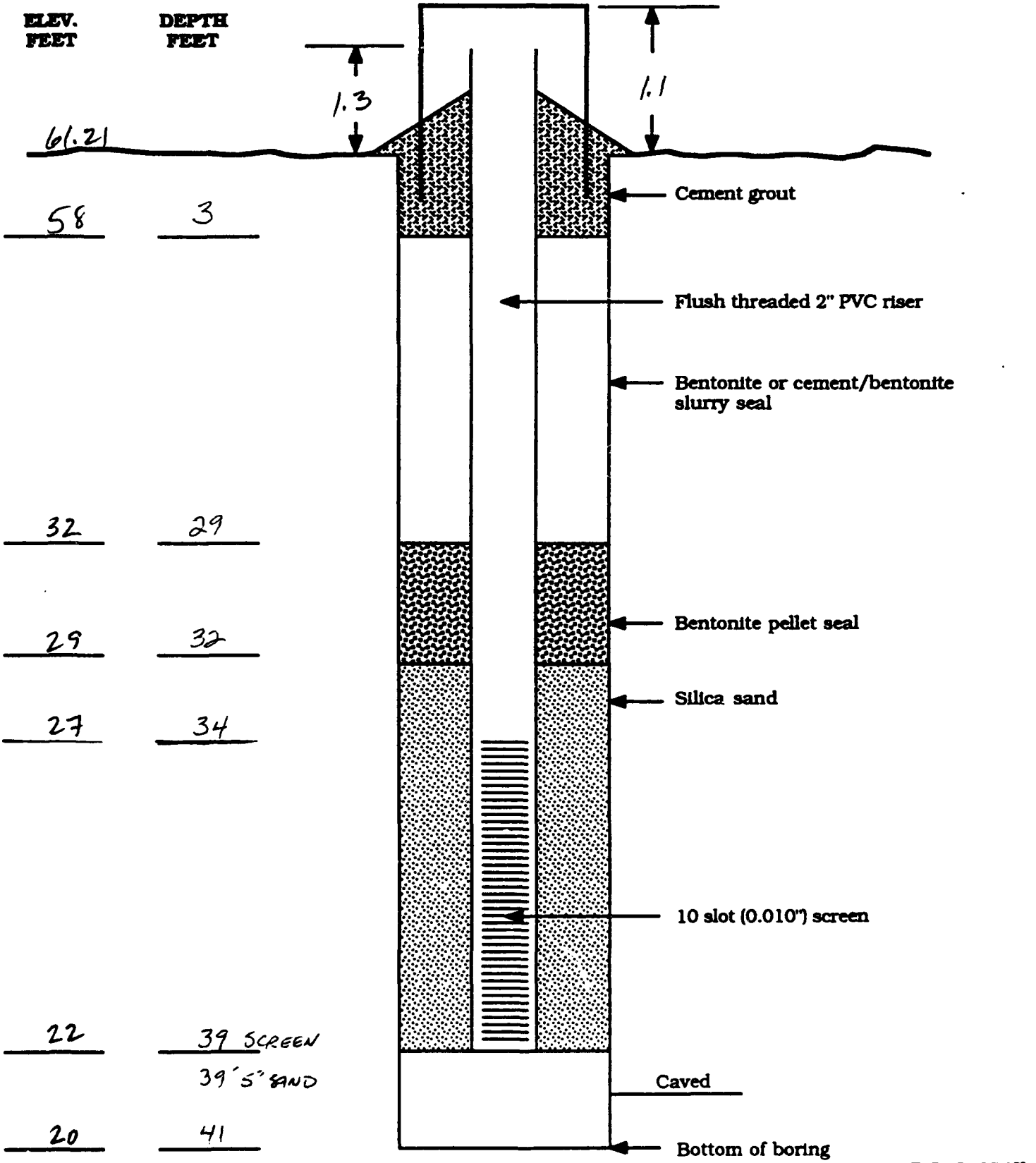


NOT TO SCALE

E.C. JORDAN

WELL INSTALLATION DETAILS

Project no.	5411-02	**Project name**	DANGB	**Well no.**	MW-112
Installed by	MATHES/JORDAN	**Date installed**	10-12-88	**Boring diameter**	NOM. 8"
Well diameter	2"	**Well material**	SCH 40 PVC	**Backfill material**	MORIE SAND

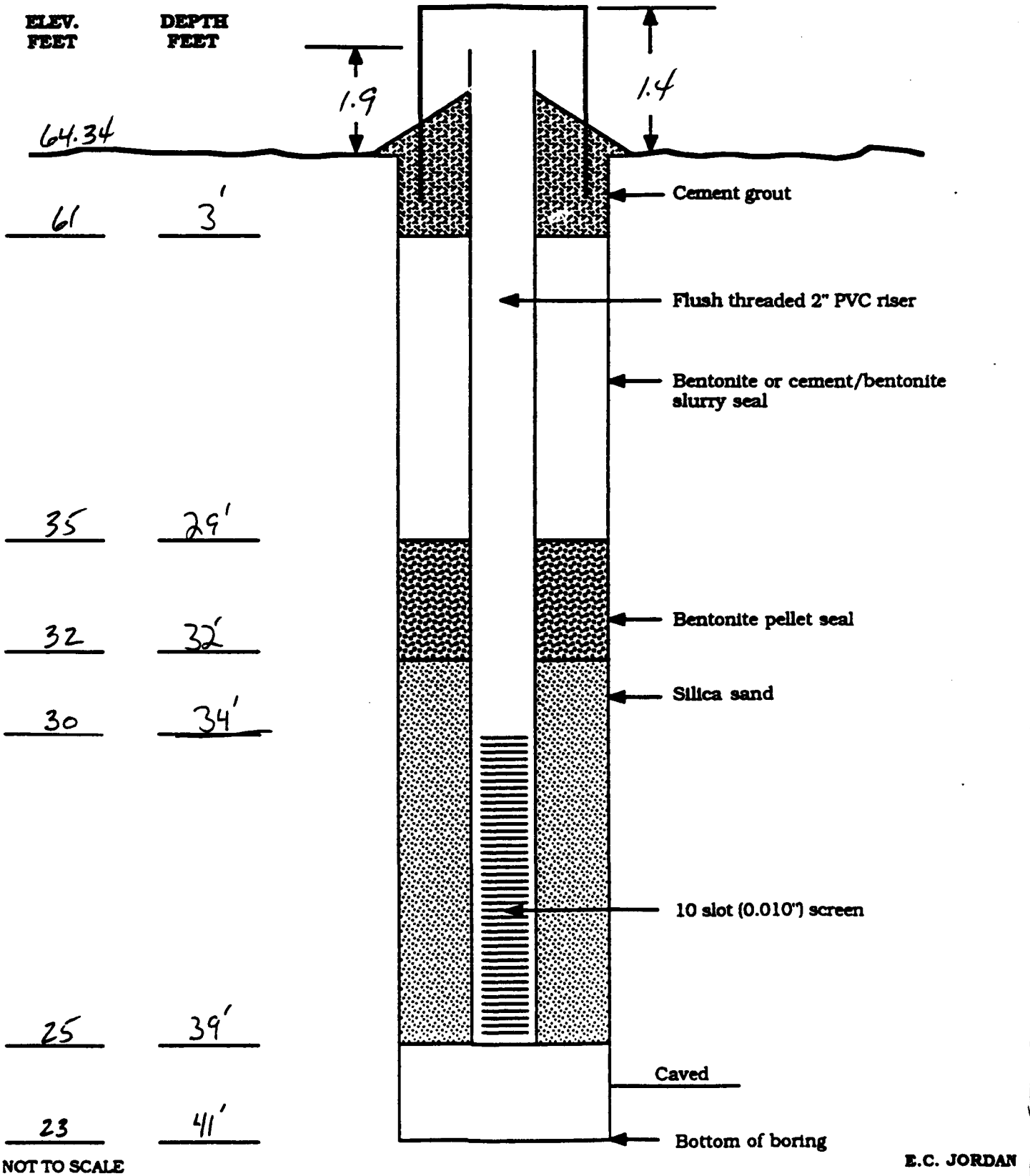


NOT TO SCALE

E.C. JORDAN

WELL INSTALLATION DETAILS

Project no. 5411-02	**Project name** DANGB	**Well no.** P-110
Installed by McThas/Jordan	**Date installed** 10/13/88	**Boring diameter** NOM. 8"
Well diameter 2"	**Well material** SCH 40 PVC	**Backfill material** Morie Sand

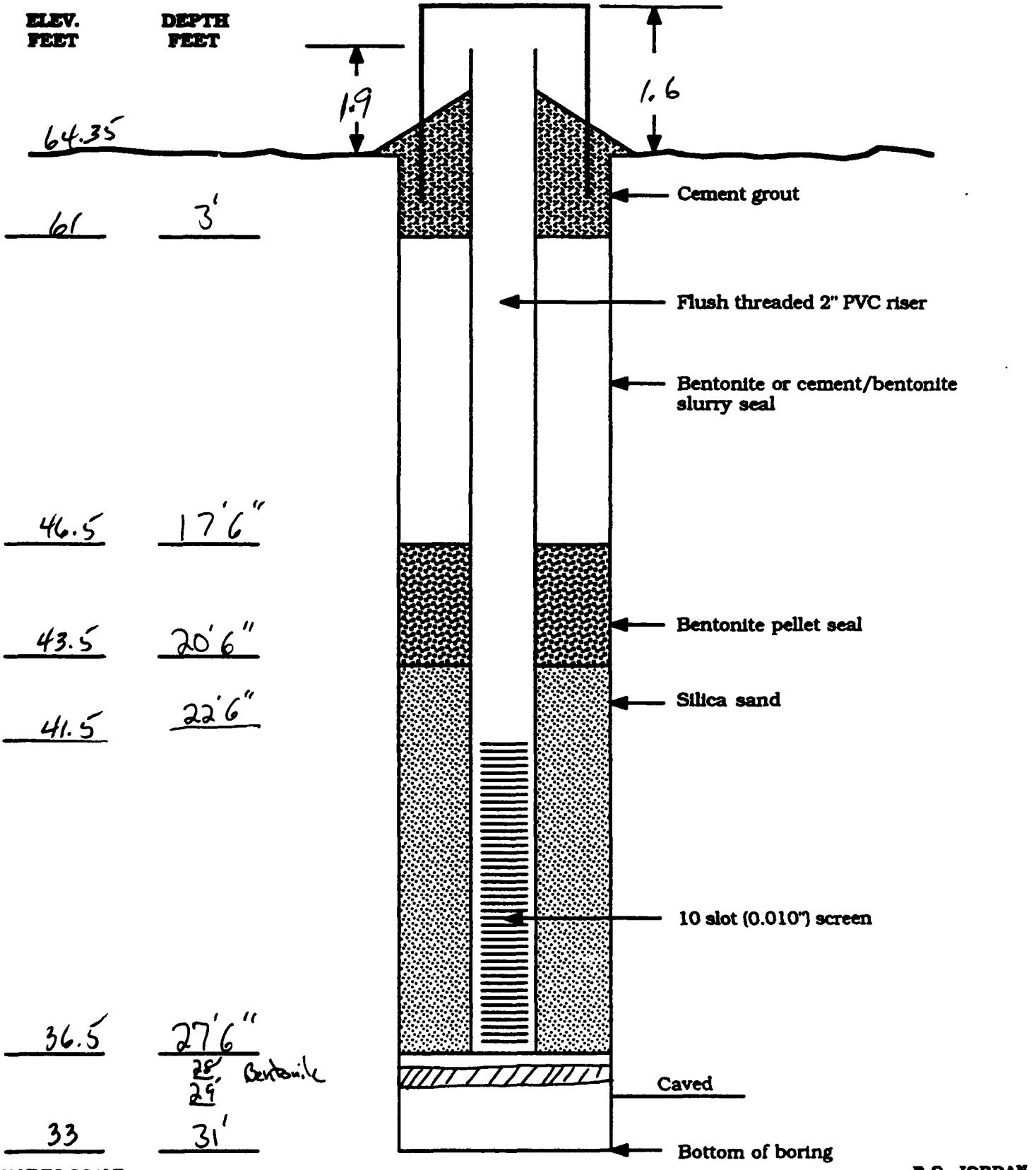


NOT TO SCALE

E.C. JORDAN

WELL INSTALLATION DETAILS

Project no.	5411-02	**Project name**	DANGB	**Well no.**	P-112
Installed by	McAfee / Jordan	**Date installed**	10/13/88	**Boring diameter**	NOM. 8"
Well diameter	2"	**Well material**	SCH 40 PVC	**Backfill material**	Morie Sand

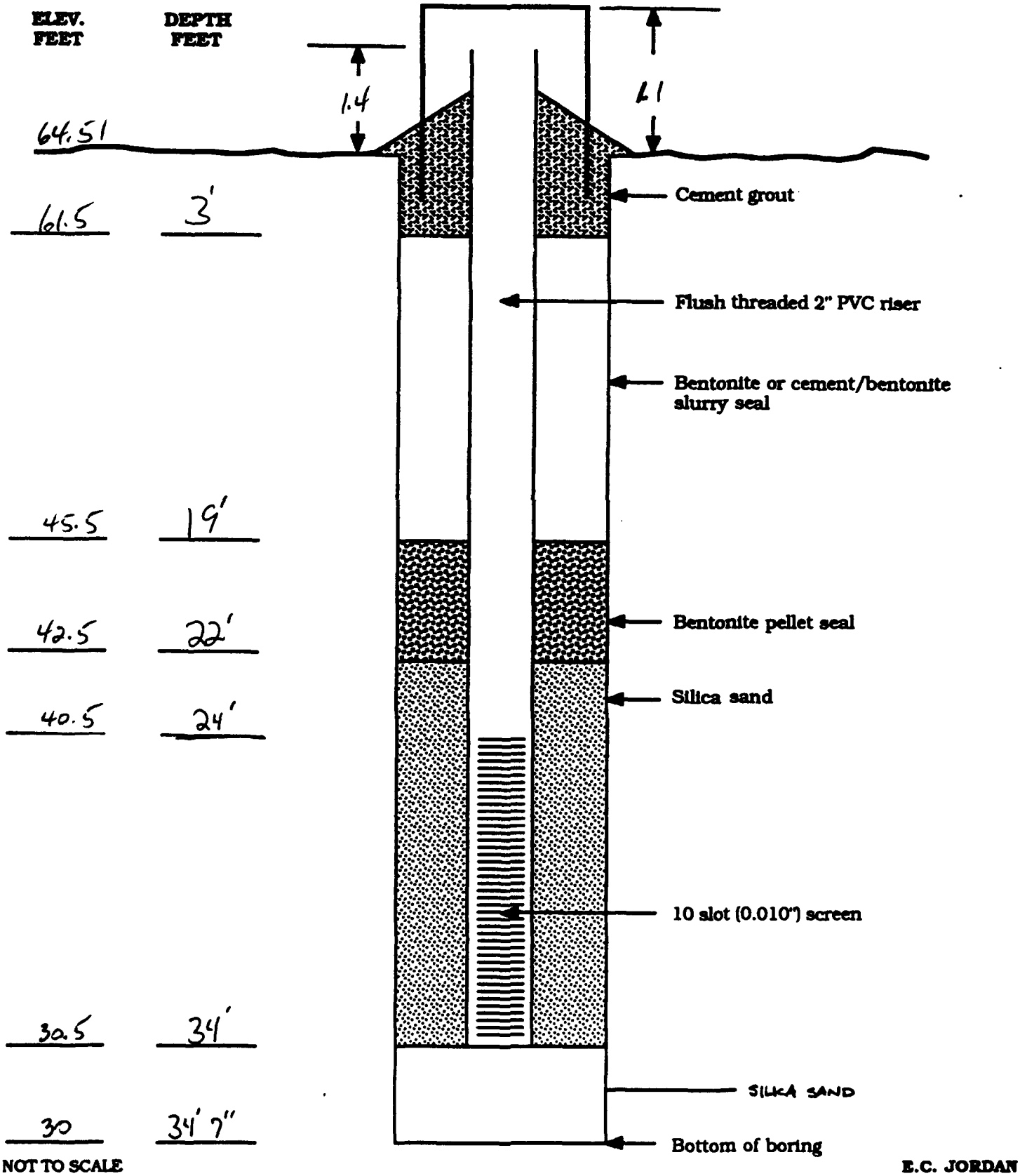


NOT TO SCALE

E.C. JORDAN

WELL INSTALLATION DETAILS

Project no. 5411-02	**Project name** DANGB	**Well no.** P-112 offset
Installed by Mathes / Jordan	**Date installed** 10/24/88	**Boring diameter** NOM. 8"
Well diameter 2"	**Well material** SCH 40 PVC	**Backfill material** Morie Sand



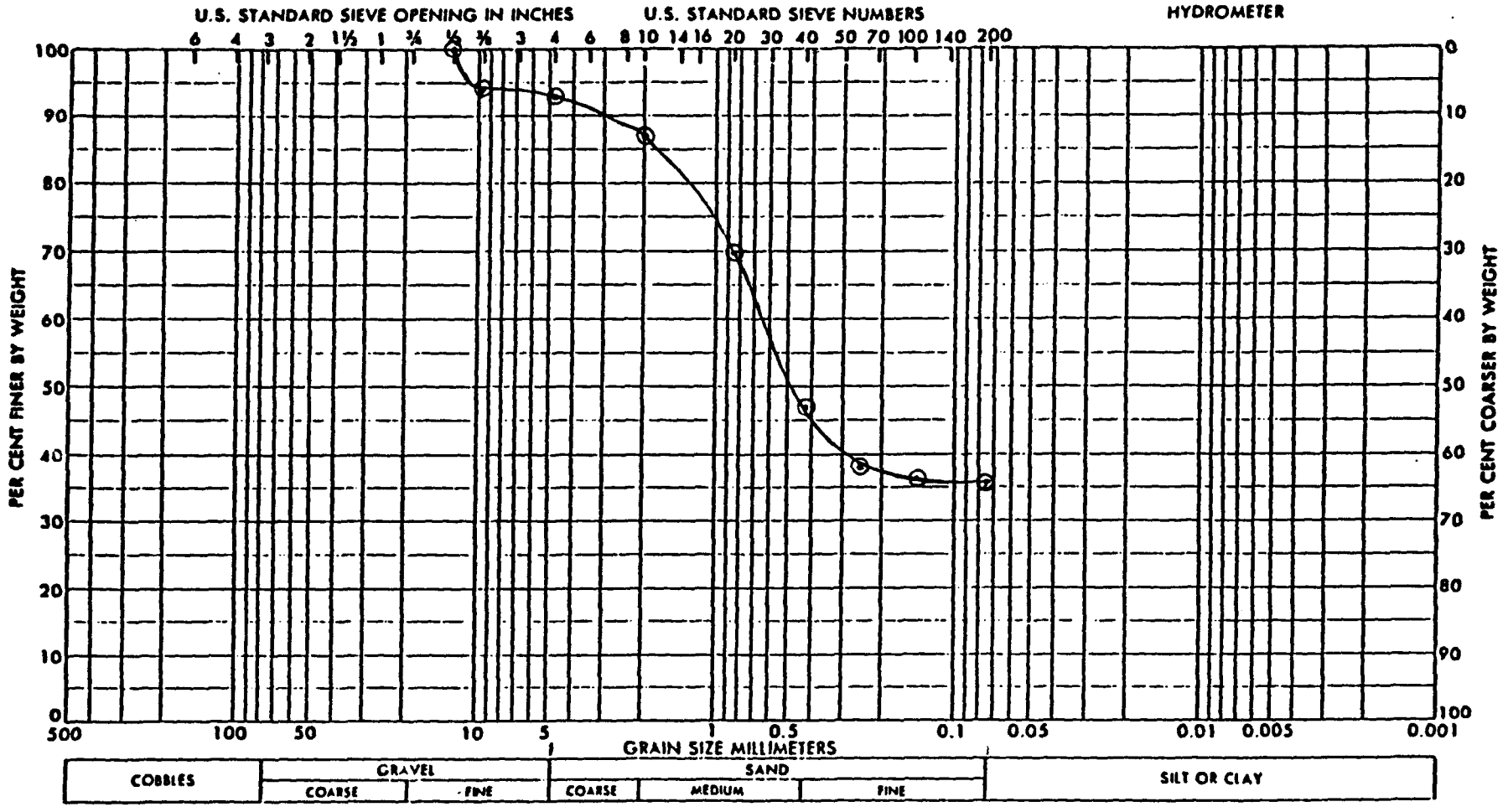
NOT TO SCALE

E.C. JORDAN

APPENDIX C

LABORATORY SOIL TEST DATA

GRAIN SIZE DISTRIBUTION



Symbol	Bcring No	Elev. or Depth	U.S.C.S.
⊙	MW-101	16-18	

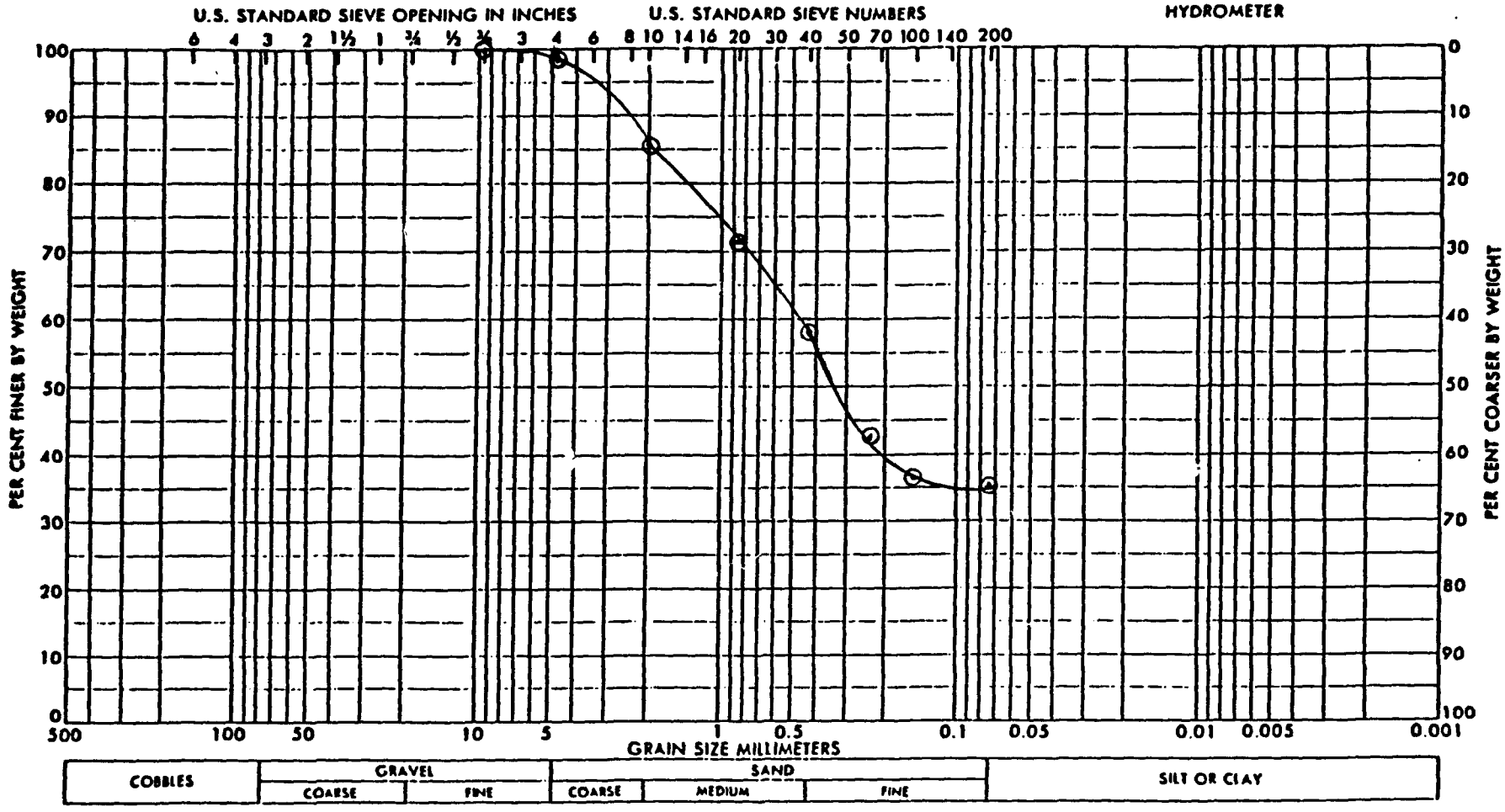
CLIENT: E.C. Jordan
PROJECT: DANGB

The Earth Technology Corporation

GRAIN SIZE DISTRIBUTION CURVE

Project No:	Date:	Figure No:
89-220-0301	12/88	

GRAIN SIZE DISTRIBUTION



Symbol	Boring No	Elev. or Depth	U.S.C.S.
⊙	MW-102	14-16	

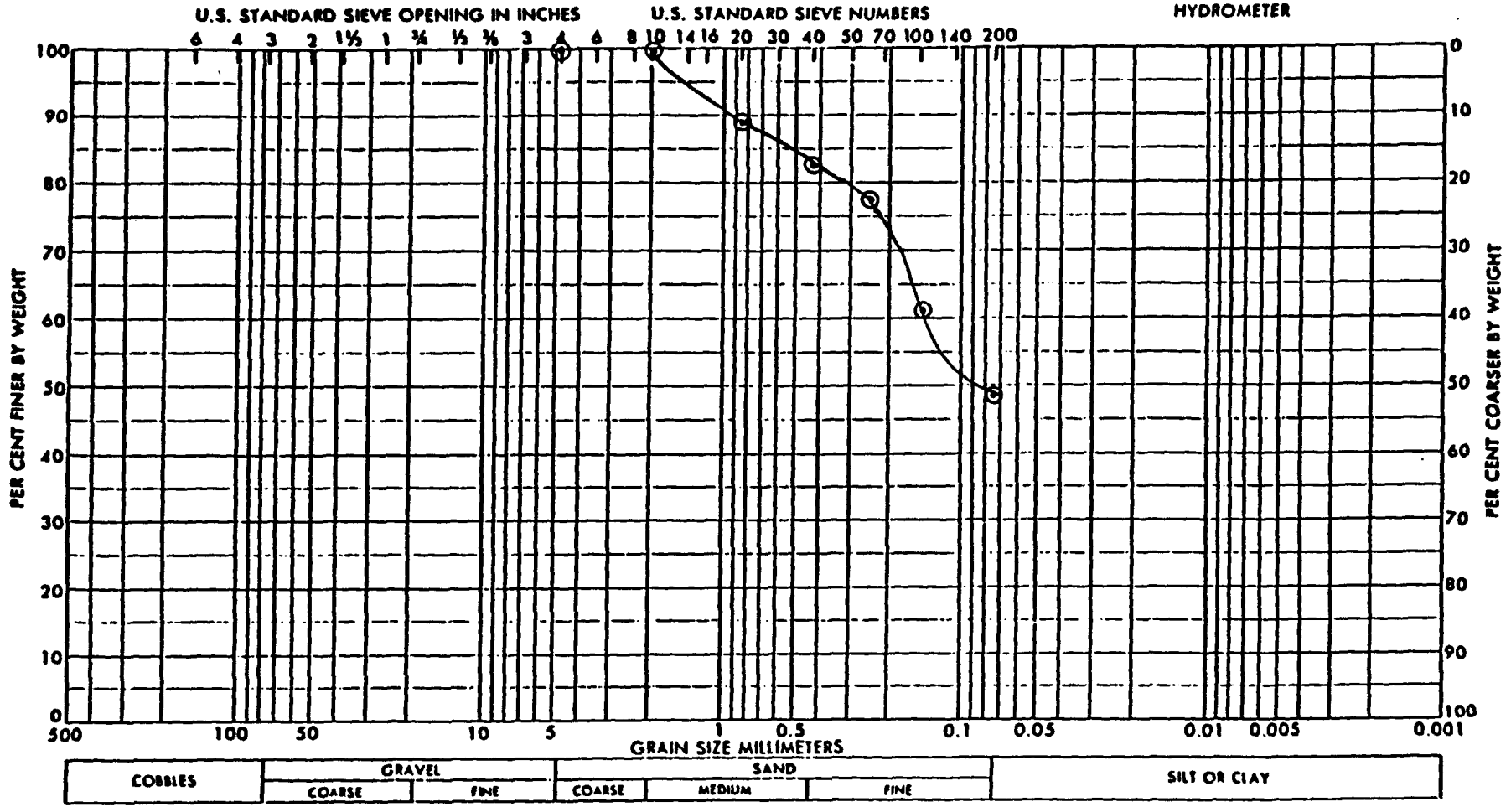
CLIENT: E.C. Jordan
PROJECT: DANGB

The Earth Technology Corporation

GRAIN SIZE DISTRIBUTION CURVE

Project No:	Date:	Figure No:
89-220-0301	12/88	

GRAIN SIZE DISTRIBUTION



Symbol	Boring No	Elev. or Depth	U.S.C.S.
⊙	MW-105	26-28	

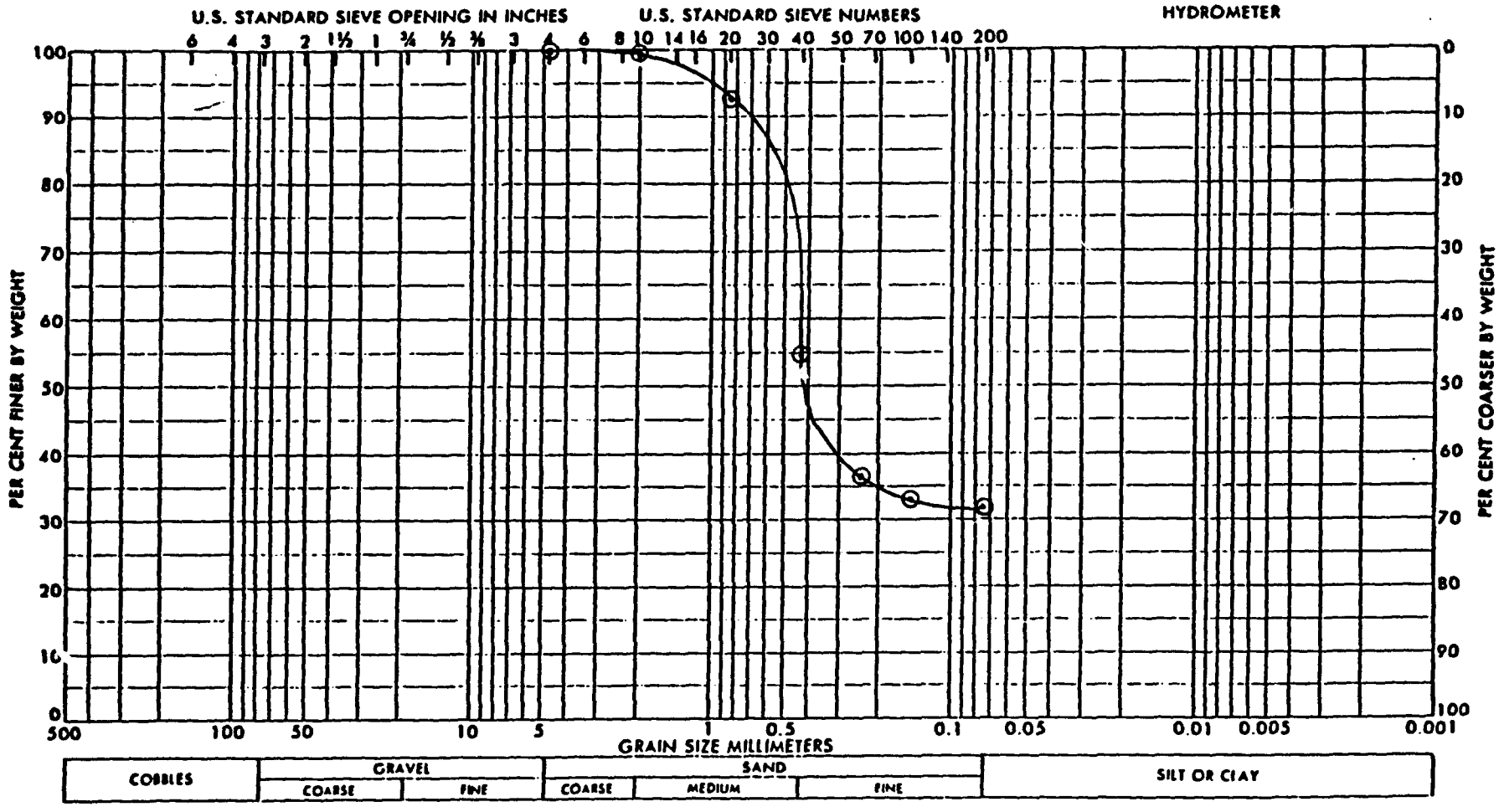
CLIENT: E.C. Jordan
PROJECT: DANGB

The Earth Technology Corporation

GRAIN SIZE DISTRIBUTION CURVE

Project No:	Date:	Figure No:
89-220-0301	12/88	

GRAIN SIZE DISTRIBUTION



Symbol	Boring No	Elev. or Depth	U.S.C.S.
⊙	MW-101	24-26	

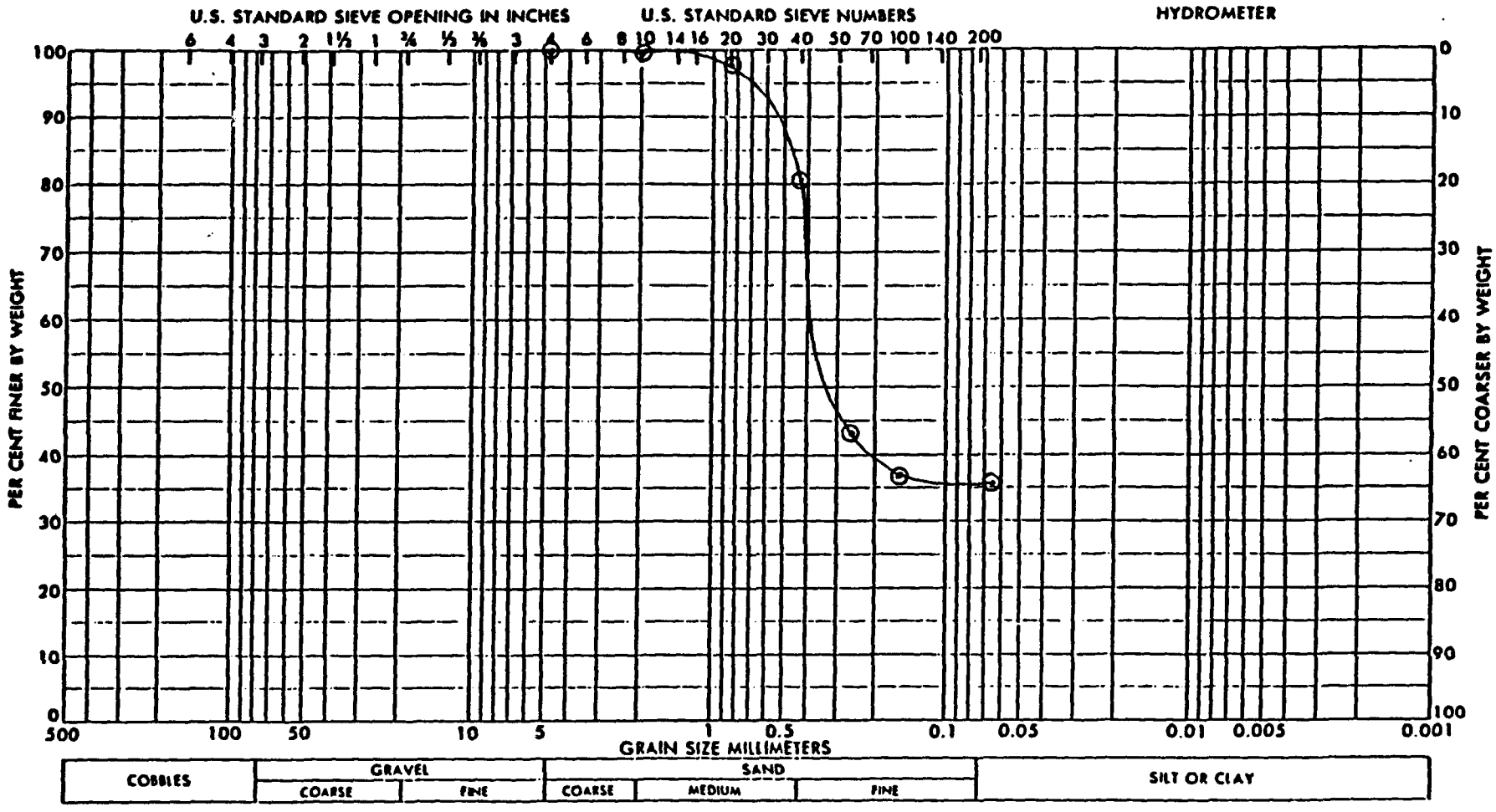
CLIENT: E.C. Jordan
PROJECT: DANGB

The Earth Technology Corporation

GRAIN SIZE DISTRIBUTION CURVE

Project No:	Date:	Figure No:
89-220-0301	12/88	

GRAIN SIZE DISTRIBUTION



Symbol	Bcring No	Elev. or Depth	U.S.C.S.
⊙	MW-105	19-21	

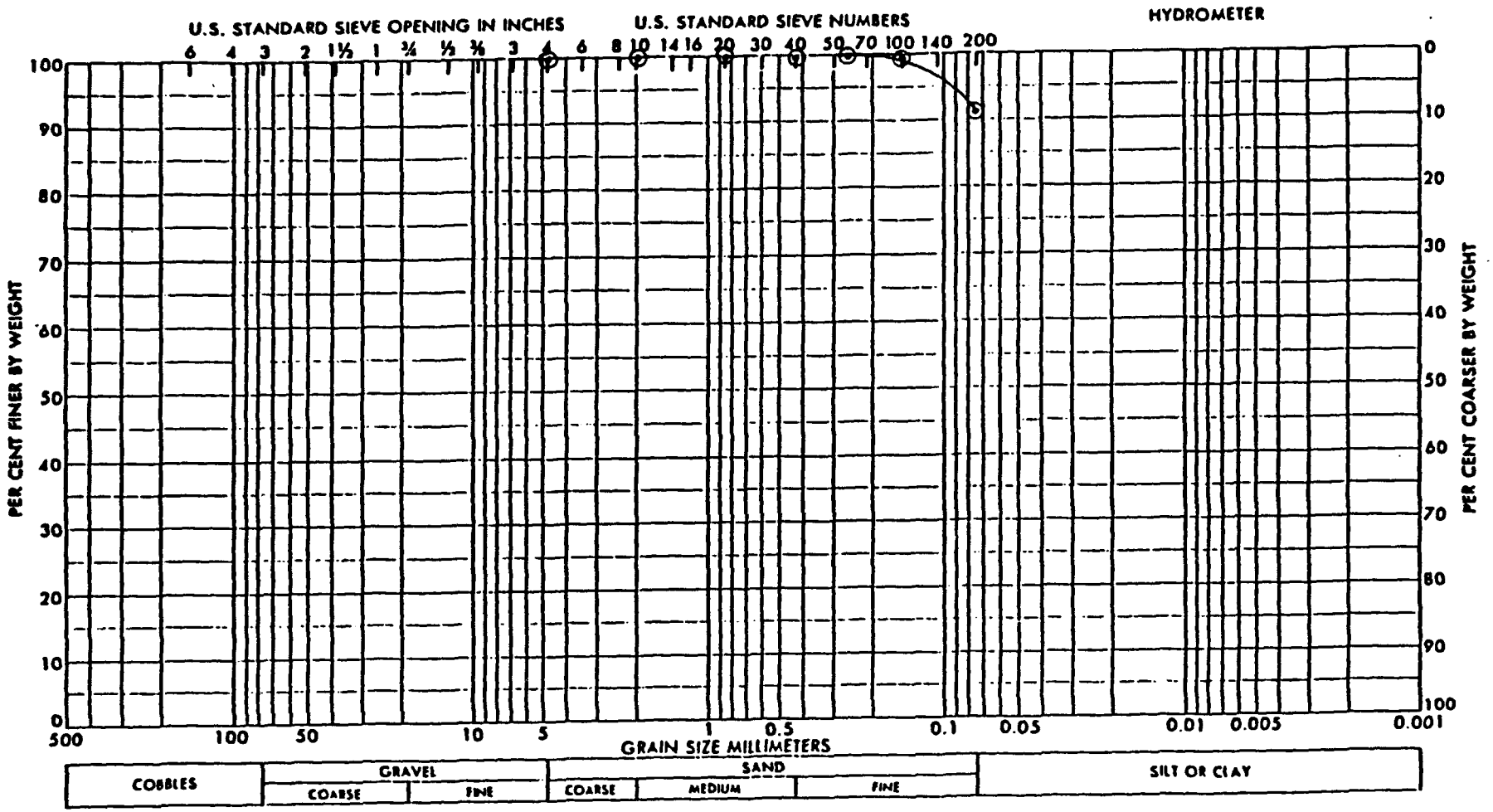
CLIENT: E.C. Jordan
PROJECT: DANGB

The Earth Technology Corporation

GRAIN SIZE DISTRIBUTION CURVE

Project No:	Date:	Figure No:
89-220-0301	12/88	

GRAIN SIZE DISTRIBUTION



Symbol	Boring No	Elev. or Depth	U.S.C.S.
⊙	MW-106	29-31	

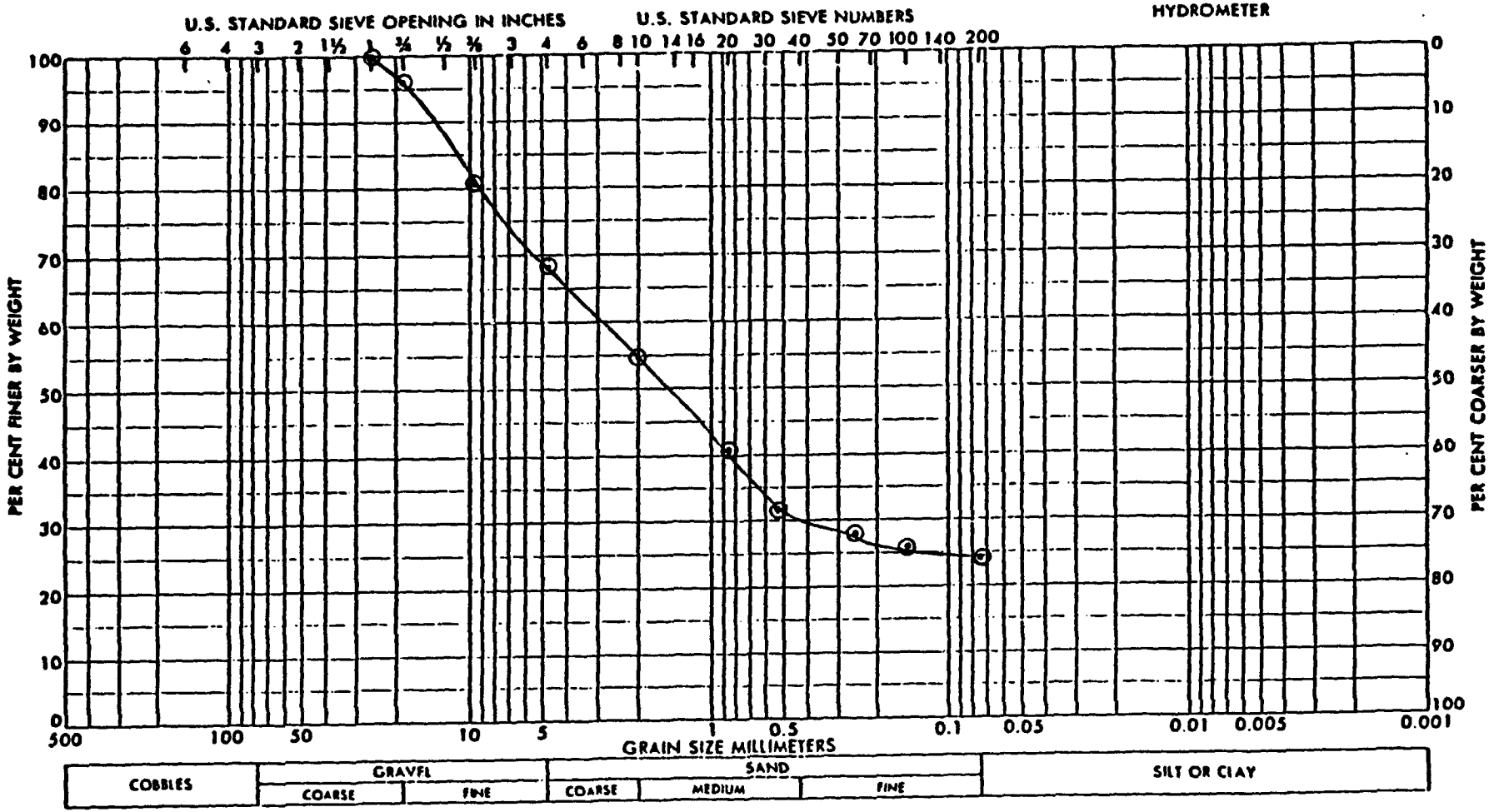
CLIENT: E.C. Jordan
PROJECT: DANGB

The Earth Technology Corporation

GRAIN SIZE DISTRIBUTION CURVE

Project No:	Date:	Figure No:
89-220-0301	12/88	

GRAIN SIZE DISTRIBUTION



Symbol	Boring No	Elev. or Depth	U.S.C.S.
⊙	MW-107	19-21	

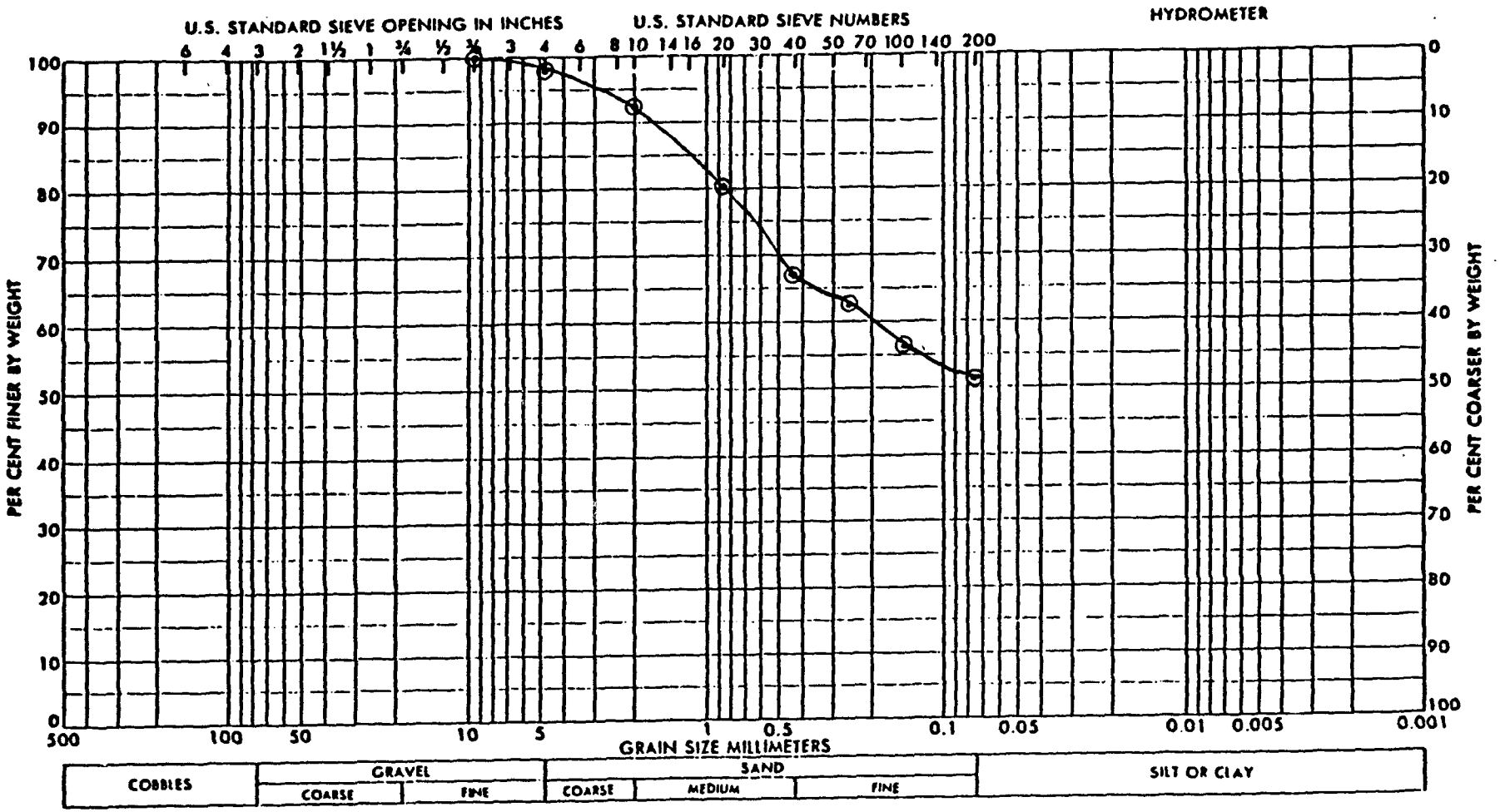
CLIENT: E.C. Jordan
PROJECT: DANGB

The Earth Technology Corporation

GRAIN SIZE DISTRIBUTION CURVE

Project No:	Date:	Figure No:
89-220-0301	12/88	

GRAIN SIZE DISTRIBUTION



Symbol	Boring No	Elev. or Depth	U.S.C.S.
⊙	MW-108	20-22	

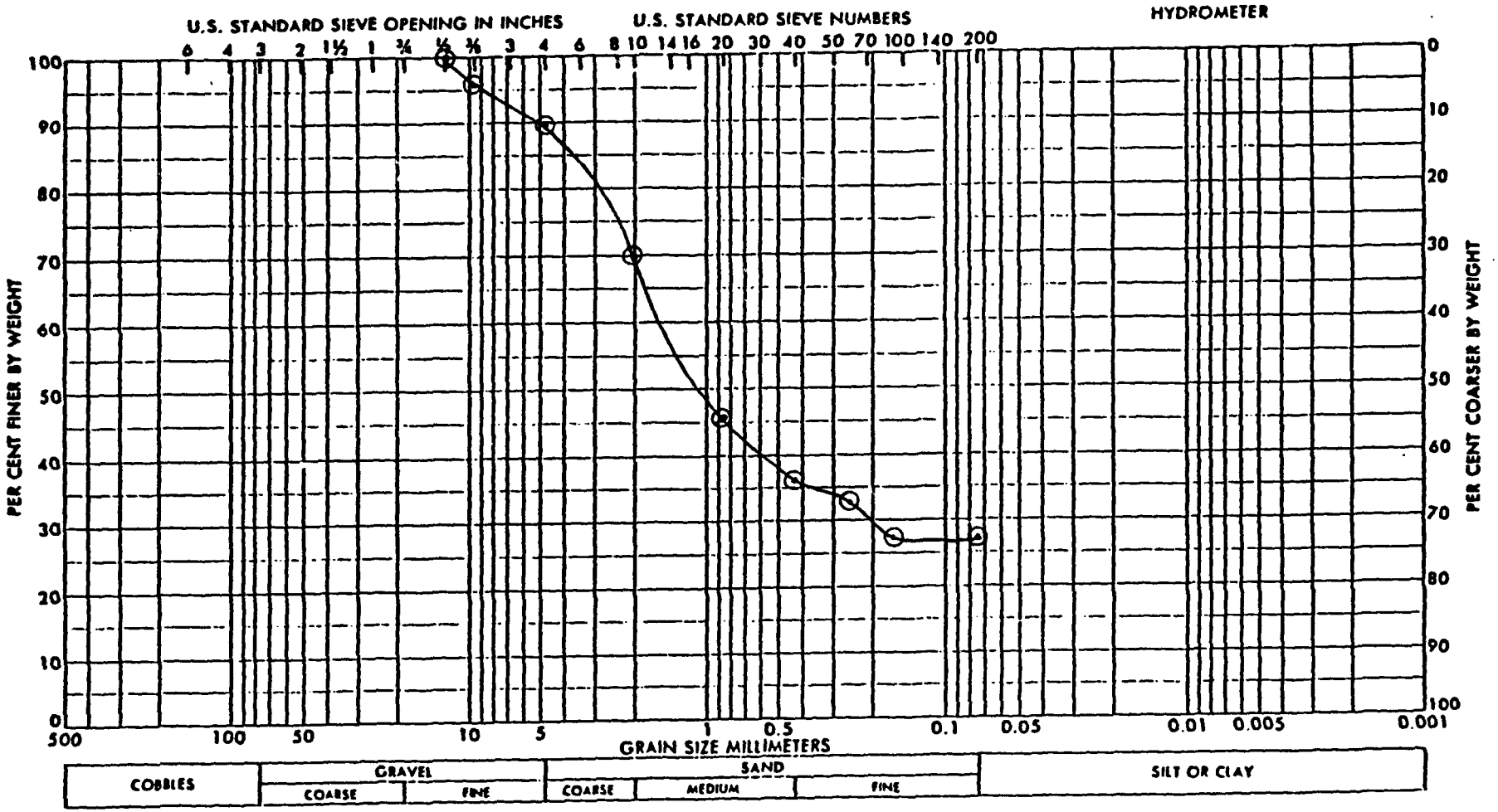
CLIENT: E.C. Jordan
PROJECT: DANGB

The Earth Technology Corporation

GRAIN SIZE DISTRIBUTION CURVE

Project No:	Date:	Figure No:
89-220-0301	12/88	

GRAIN SIZE DISTRIBUTION



Symbol	Bcring No	Elev. or Depth	U.S.C.S.
⊙	MW-109	19 - 21	

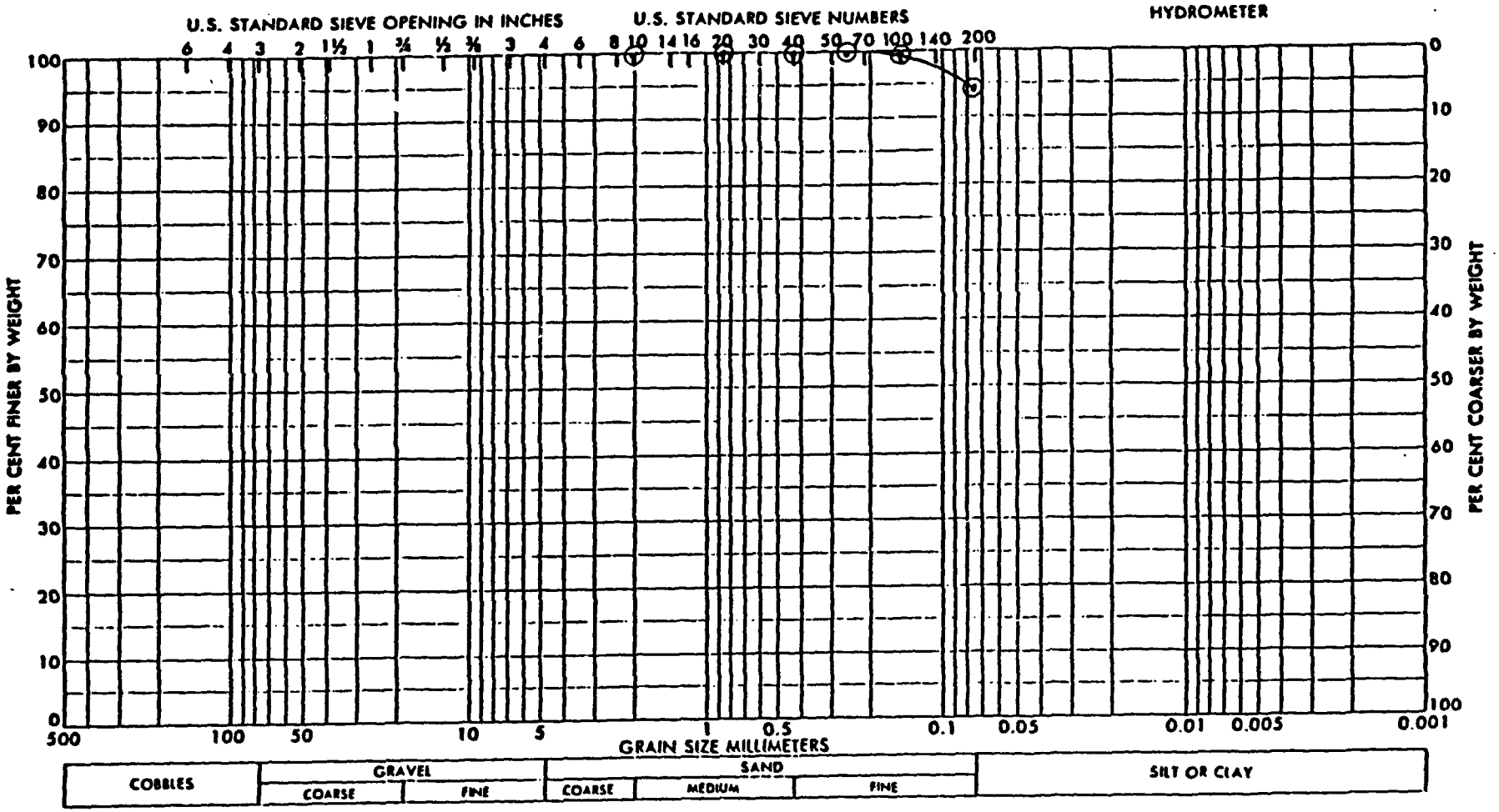
CLIENT: E.C. Jordan
PROJECT: DANGB

The Earth Technology Corporation

GRAIN SIZE DISTRIBUTION CURVE

Project No:	Date:	Figure No:
89-220-0301	12/88	

GRAIN SIZE DISTRIBUTION



Symbol	Bcring No	Elev. or Depth	U.S.C.S.
⊙	MW-111	29-31	

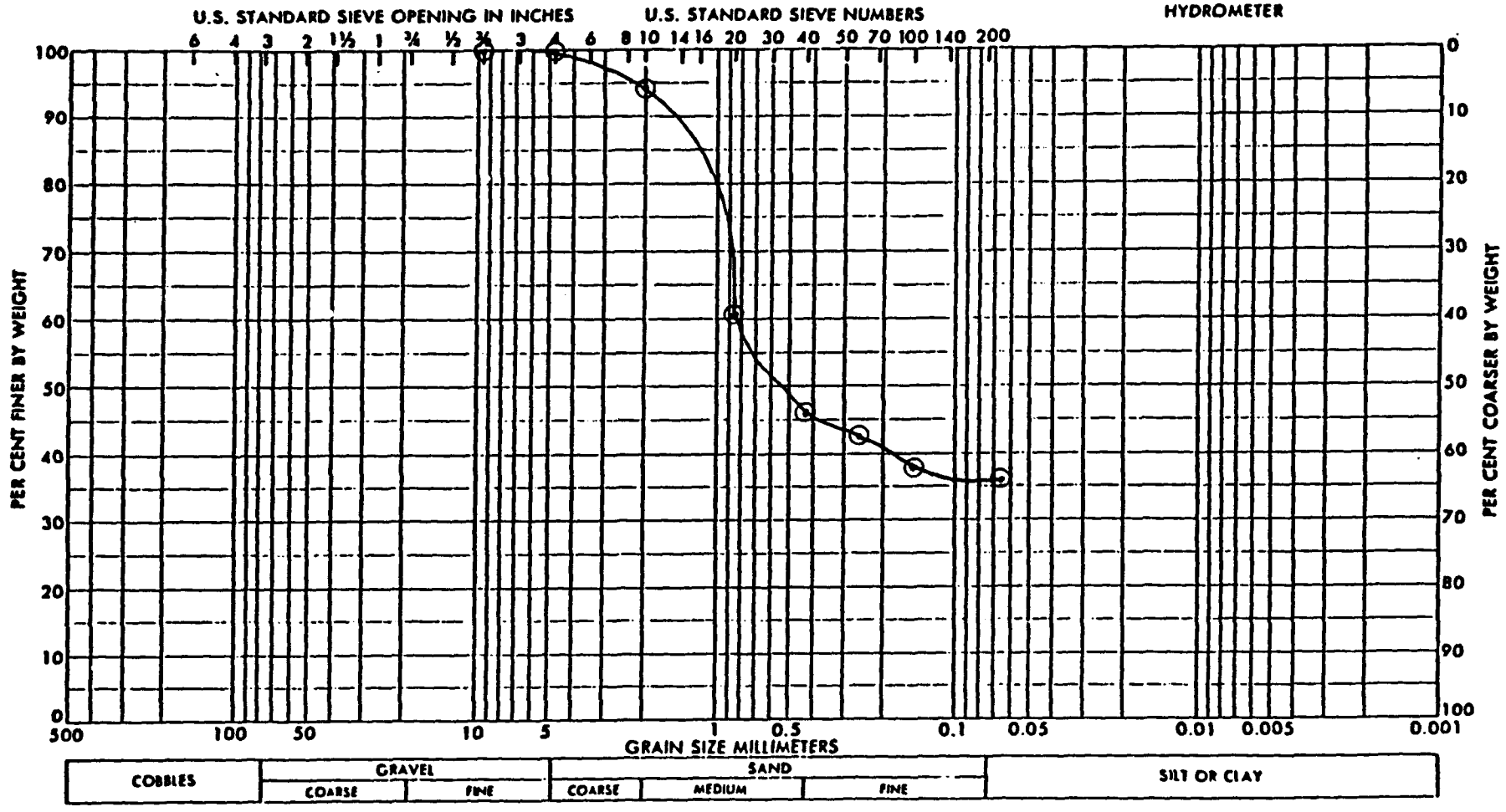
CLIENT: E.C. Jordan
PROJECT: DANGB

The Earth Technology Corporation

GRAIN SIZE DISTRIBUTION CURVE

Project No:	Date:	Figure No:
89-220-0301	12/88	

GRAIN SIZE DISTRIBUTION



Symbol	Bcring No	Elev. or Depth	U.S.C.S.
⊙	MW-112	34-36	

CLIENT: E.C. Jordan
PROJECT: DANGB

The Earth Technology Corporation

GRAIN SIZE DISTRIBUTION CURVE

Project No:	Date:	Figure No:
89-220-0301	12/88	

SIEVE ANALYSIS
RESULTS

1)	MW-101 16'-18'	7% Gravel Trace 57% Sand (mostly fine) 36% Silt and/or Clay	Sand Tr and Fine Sand and Silt, Trace Gravel, Trace Clay
2)	MW-102 14'-16'	2% Gravel Trace 63% Sand Well Graded 35% Silt and/or Clay	Well Graded Sand and Silt, Trace Gravel, Trace Clay
3)	MW-103 26'-28'	52% Fine and Med. Sand 48% Silt and/or Clay	Fine to Med. Sand and Silt, Trace Clay
4)	MW-104 24'-26'	68% Fine and Med. Sand 32% Silt and/or Clay	Fine and Med. Sand, Some Silt, Trace Clay
5)	MW-105 19'-21'	64% Fine and Med. Sand 36% Silt and/or Clay	Fine to Med. Sand and Silt, Trace Clay
6)	MW-106 29'-31'	9% Fine Sand Trace 91% Silt and/or Clay	Silt/Clay with Trace Fine Sand
7)	MW-107 19'-21'	32% Fine Gravel 44% Well graded F-C Sand 24% Silt and/or Clay	Fine to Coarse Sand, Some Gravel, Some Silt, Trace Clay
8)	MW-108 20'-22'	2% Gravel 46% Fine to Coarse Sand 52% Silt and/or Clay	Silt and Sand, Trace Gravel, Trace Clay
9)	MW-109 19'-21'	10% Gravel 63% Well Graded Sand 27% Silt and/or Clay	Well Graded Sand, Some Silt, Trace Gravel, Trace Clay
10)	MW-111 29'-31'	6% Fine Sand 94% Silt and/or Clay	Silt and Clay, Trace Fine Sand
11)	MW-112 34'-36	64% Well Graded Sand 36% Silt and/or Clay	Well Graded Sand and Silt, Trace Clay

APPENDIX D

HYDRAULIC CONDUCTIVITY RESULTS AND SAMPLE CALCULATIONS

HYDRAULIC CONDUCTIVITY TEST RESULTS
SI STUDY DELAWARE ANGB
GREATER WILMINGTOM AIRPORT
NEW CASTLE, DELAWARE

TEST LOCATION	TYPE OF TEST	HYDRAULIC CONDUCTIVITY cm/sec	HYDRAULIC CONDUCTIVITY ft/day
MW-101	RISING HEAD/IN SITU	2.06E-02	58.39
MW-102	RISING HEAD/IN SITU	4.36E-03	12.36
MW-103	RISING HEAD/IN SITU	1.24E-02	35.15
MW-104	RISING HEAD/IN SITU	5.19E-03	14.71
MW-105	RISING HEAD/IN SITU	1.21E-02	34.30
MW-106	RISING HEAD/IN SITU	9.81E-03	27.81
MW-107	RISING HEAD/IN SITU	2.67E-02	75.69
MW-108	RISING HEAD/IN SITU	8.60E-03	24.38
MW-110	RISING HEAD/IN SITU	8.94E-03	25.34
MW-111	RISING HEAD/IN SITU	1.50E-02	42.52
MW-112	RISING HEAD/IN SITU	2.60E-02	73.70
P-110	RISING HEAD/IN SITU	1.02E-02	28.91
P-112	RISING HEAD/IN SITU	7.03E-02	199.28

PROJECT DANGB	COMP. BY MPD	JOB NO. 5411-03
SAMPLE CALCULATION: HYDRAULIC CONDUCTIVITY	CHK. BY TL	DATE 12/12/88

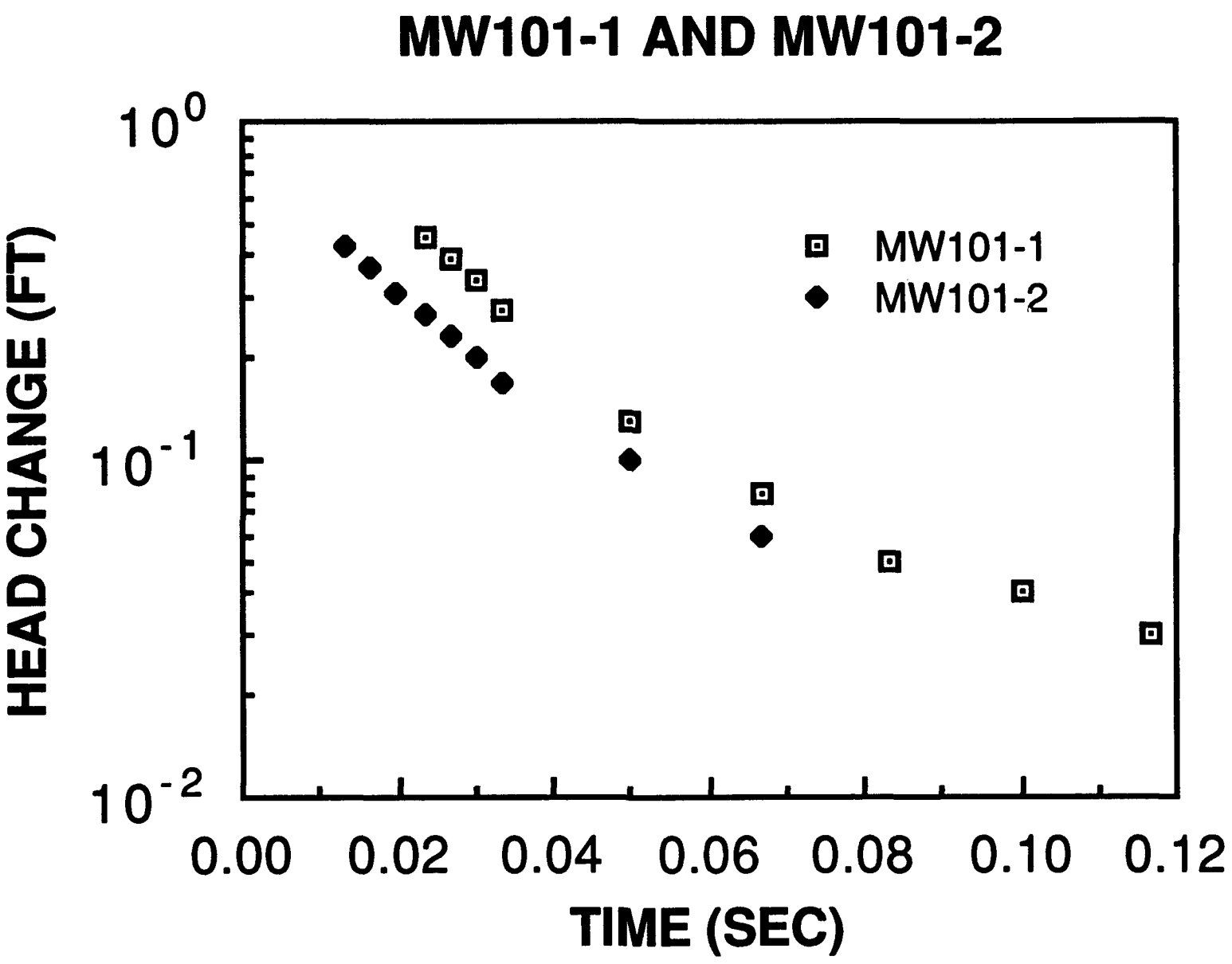
MW-102: from Hvorslev (1951)

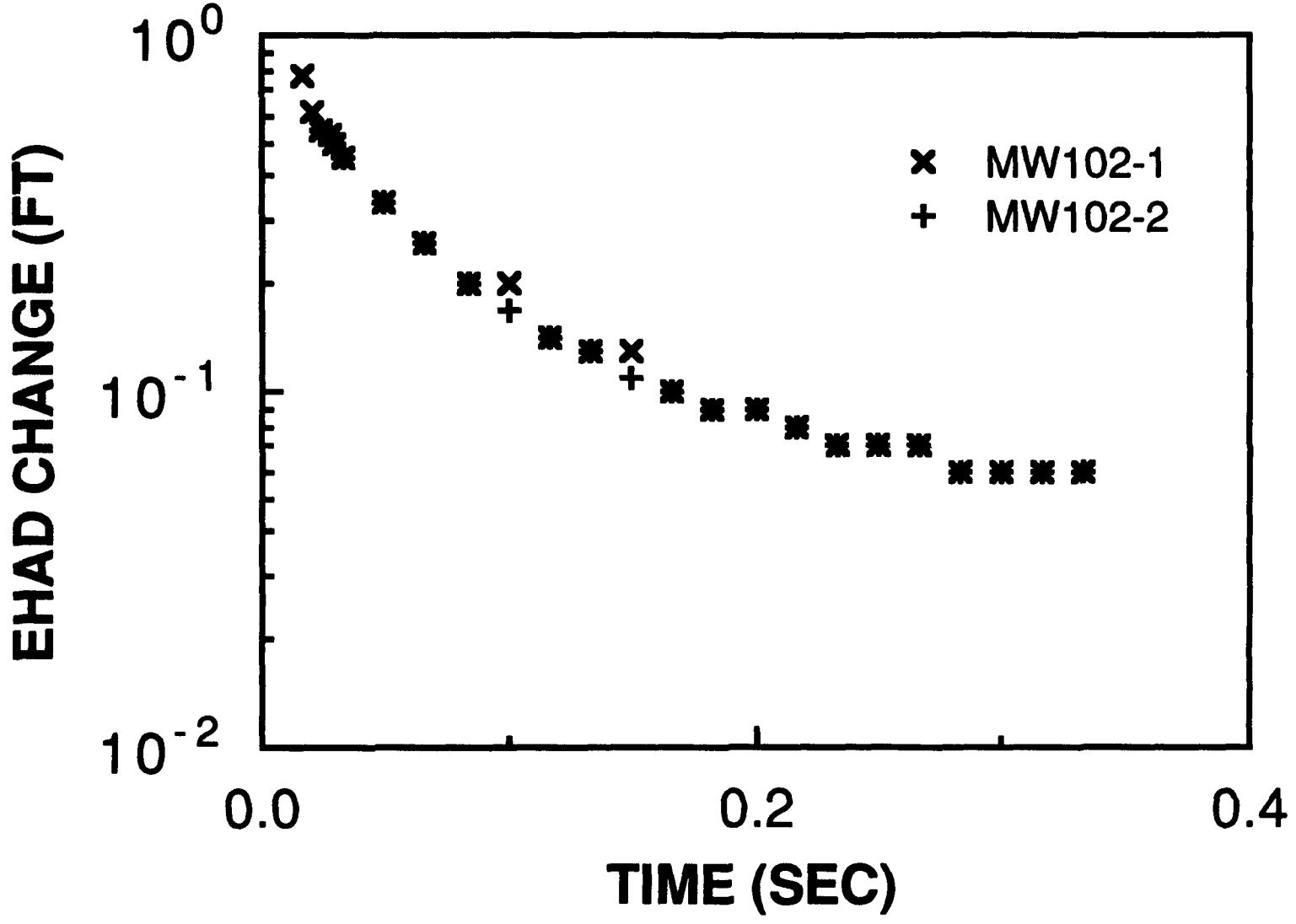
$$K = \frac{d^2 \cdot \ln\left[\frac{2mL}{D}\right]}{8 \cdot L \cdot (t_2 - t_1)} \cdot \ln\left(\frac{H_1}{H_2}\right)$$

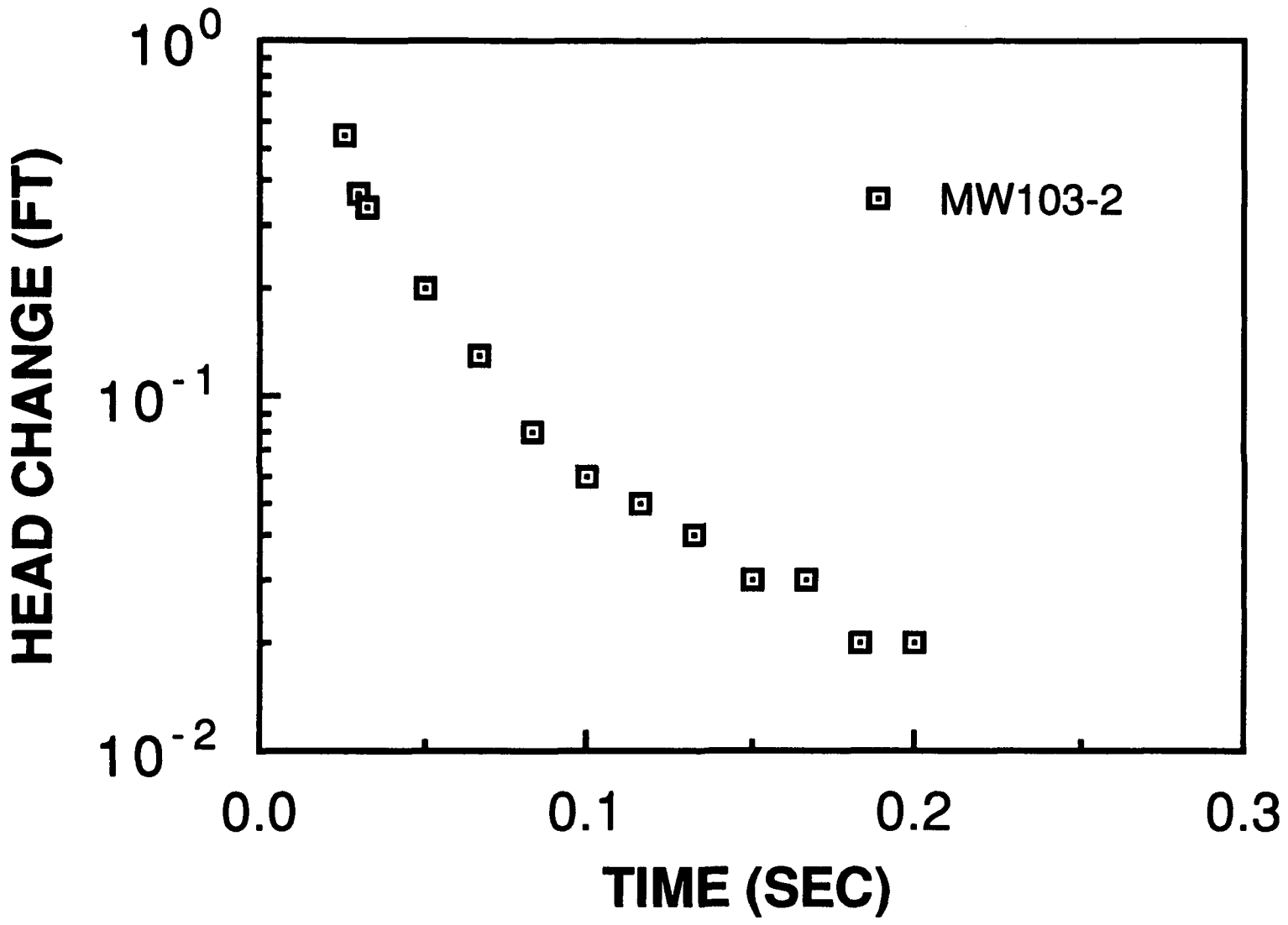
d = 0.17 feet (well diameter)
D = 0.67 feet (bore hole diameter)
L = 10.06 (length of sandpack)
m = 1 (assumed anisotropy ratio)
H_1 = 0.78 feet, t_1 = 0.0166 min
H_2 = 0.02 feet, t_2 = 1.0 min

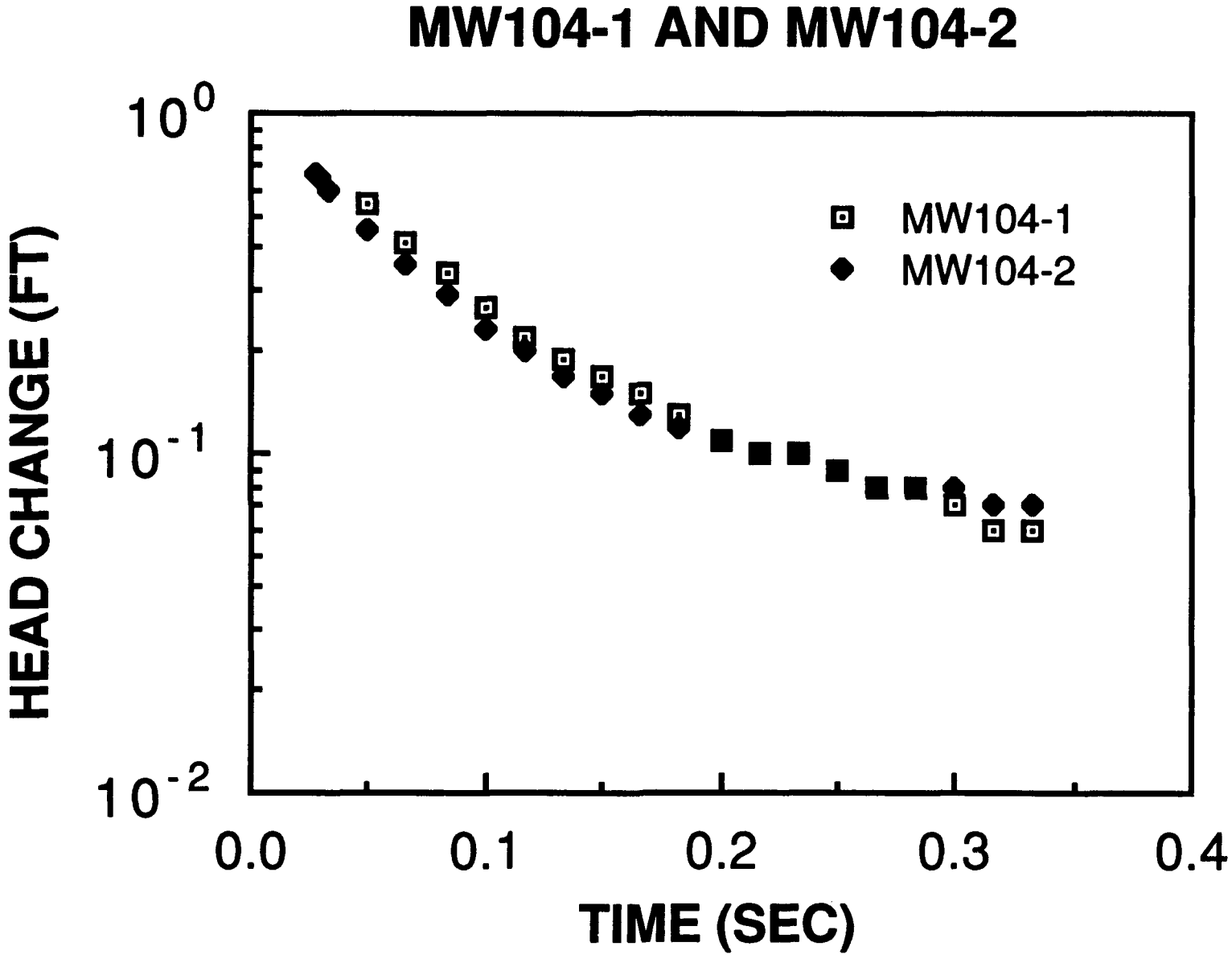
$$K = \frac{(0.17)^2 \cdot \ln\left[(2 \cdot 1 \cdot 10.06)/0.67\right]}{8 \cdot 10.06\,(1.0 - 0.0166)} \cdot \ln\left(\frac{0.78}{0.02}\right)$$

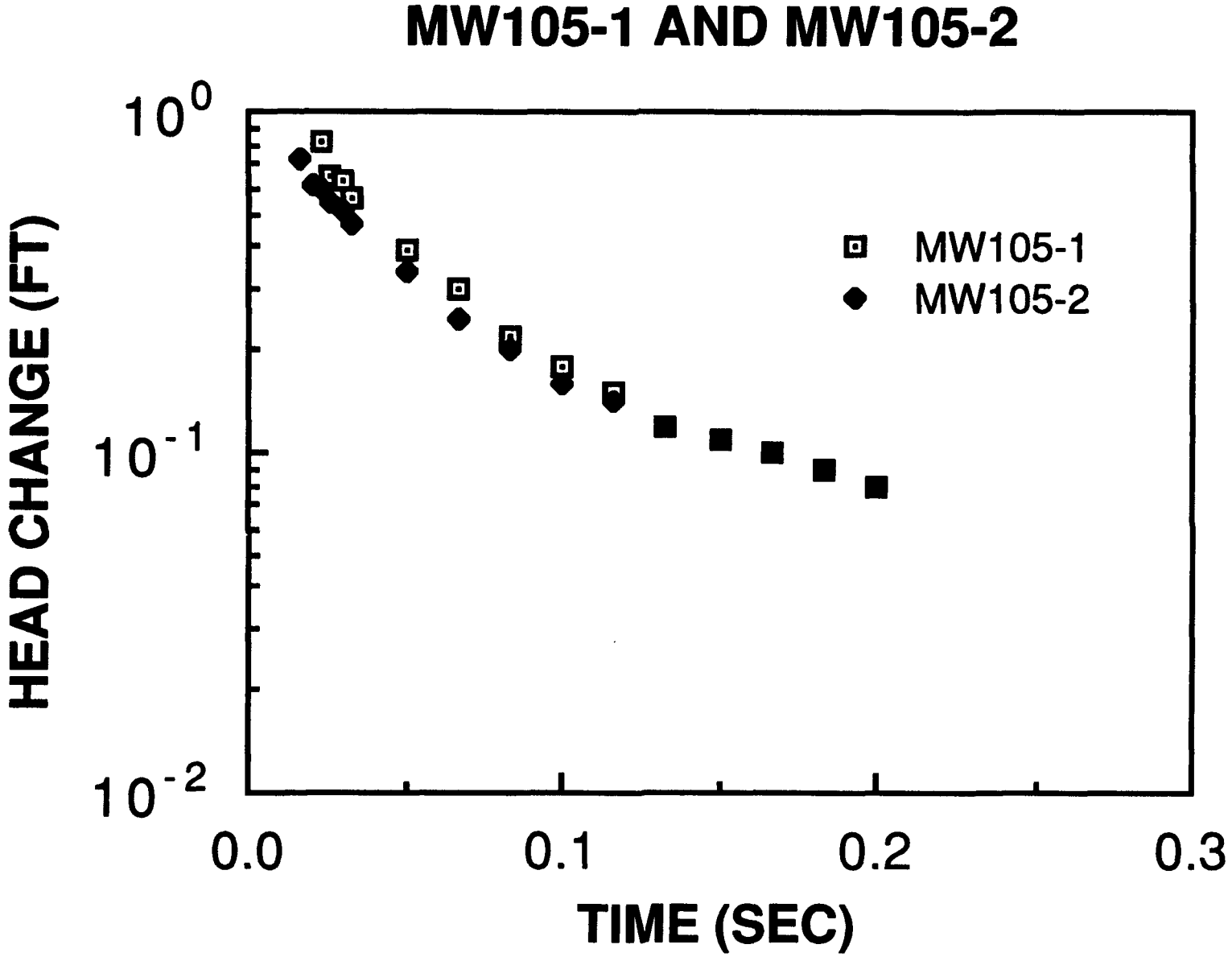
$$= 4.55 \times 10^{-3}\ \text{ft/min} = 6.55\ \text{ft/day}$$

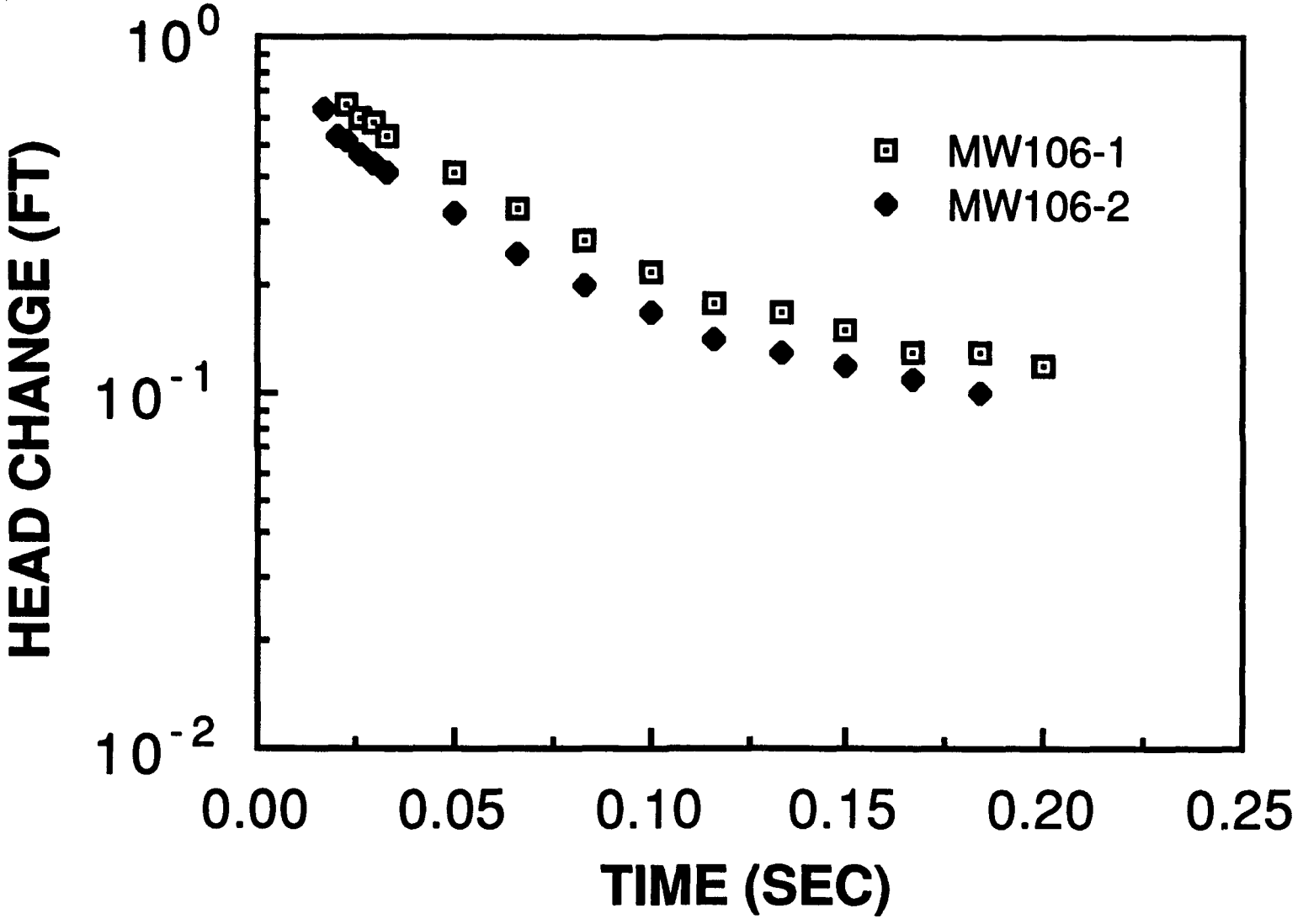

MW101-1 AND MW101-2
HEAD CHANGE (FT)
10^0
10^{-1}
10^{-2}
0.00
0.02
0.04
0.06
0.08
0.10
0.12
TIME (SEC)
MW101-1
MW101-2

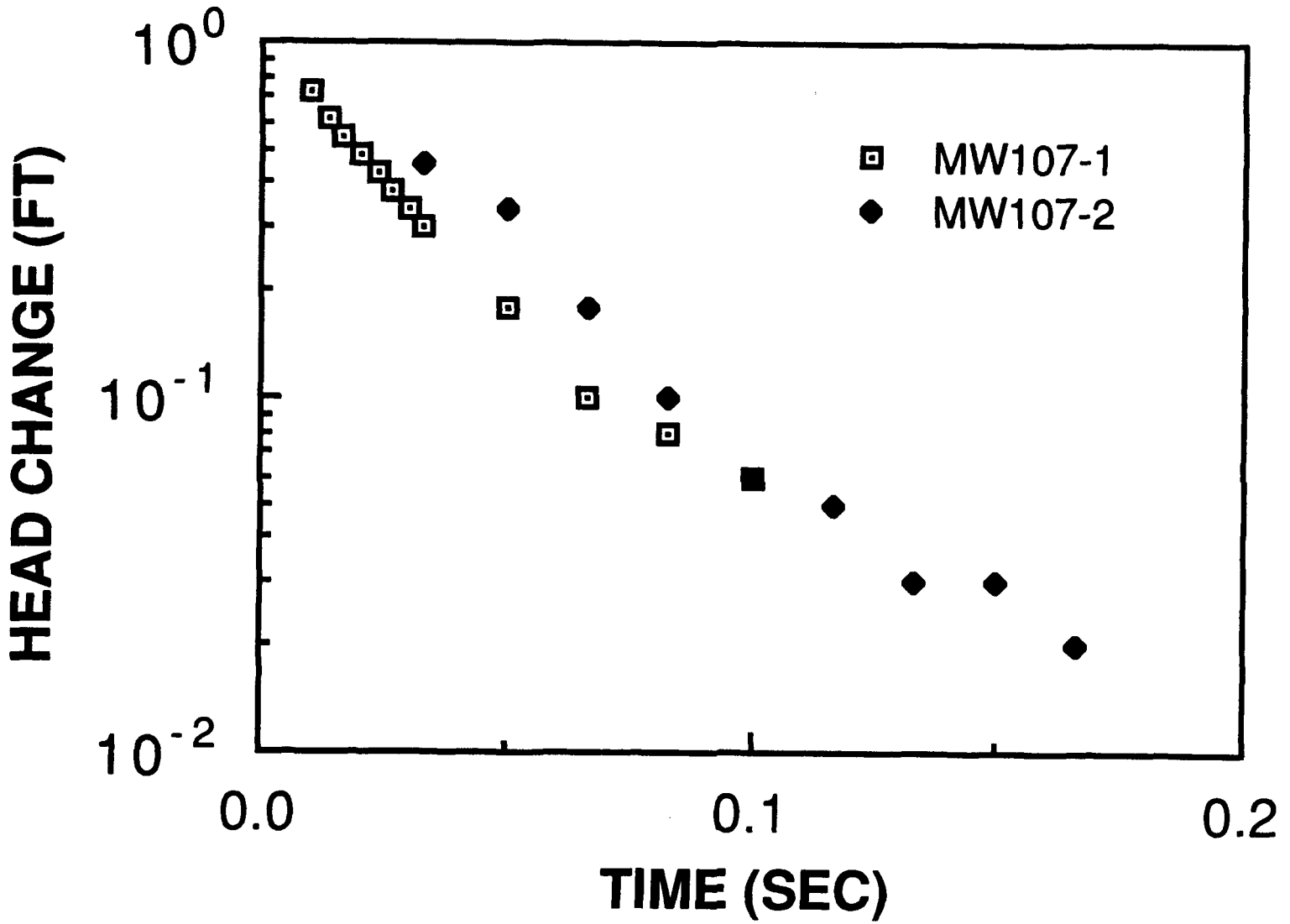

MW102-1 AND MW102-2
EHAD CHANGE (FT)
10^0
10^{-1}
10^{-2}
MW102-1
MW102-2
0.0
0.2
0.4
TIME (SEC)


MW103-2
HEAD CHANGE (FT)
10^0
10^{-1}
10^{-2}
MW103-2
0.0
0.1
0.2
0.3
TIME (SEC)


MW104-1 AND MW104-2
HEAD CHANGE (FT)
10^0
10^{-1}
10^{-2}
0.0
0.1
0.2
0.3
0.4
TIME (SEC)
MW104-1
MW104-2


MW105-1 AND MW105-2
HEAD CHANGE (FT)
10^0
10^{-1}
10^{-2}
0.0
0.1
0.2
0.3
TIME (SEC)
MW105-1
MW105-2


MW106-1 AND MW106-2
HEAD CHANGE (FT)
10^0
10^{-1}
10^{-2}
MW106-1
MW106-2
0.00
0.05
0.10
0.15
0.20
0.25
TIME (SEC)


MW107-1 AND MW107-2
HEAD CHANGE (FT)
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10^{-1}
10^{-2}
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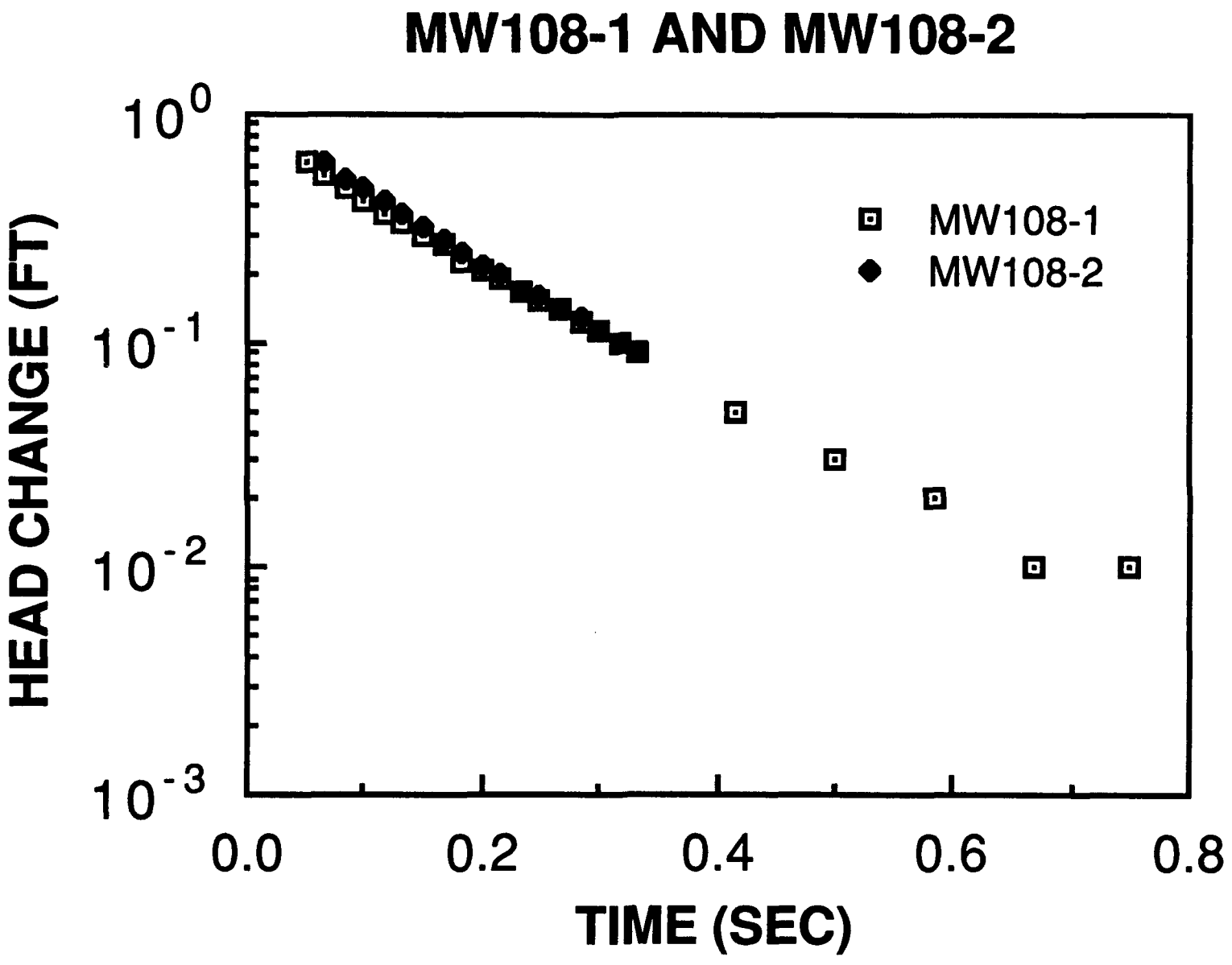
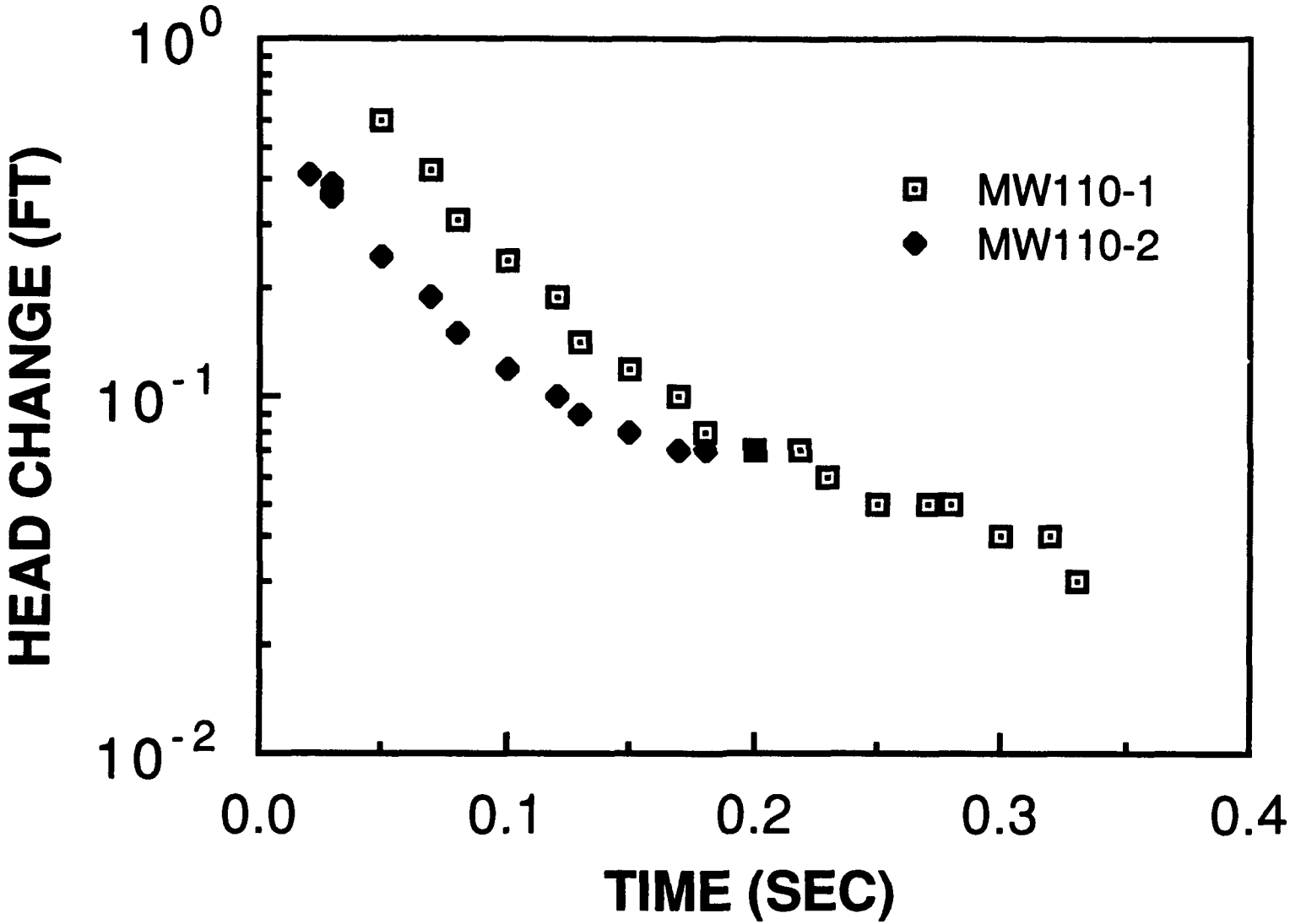
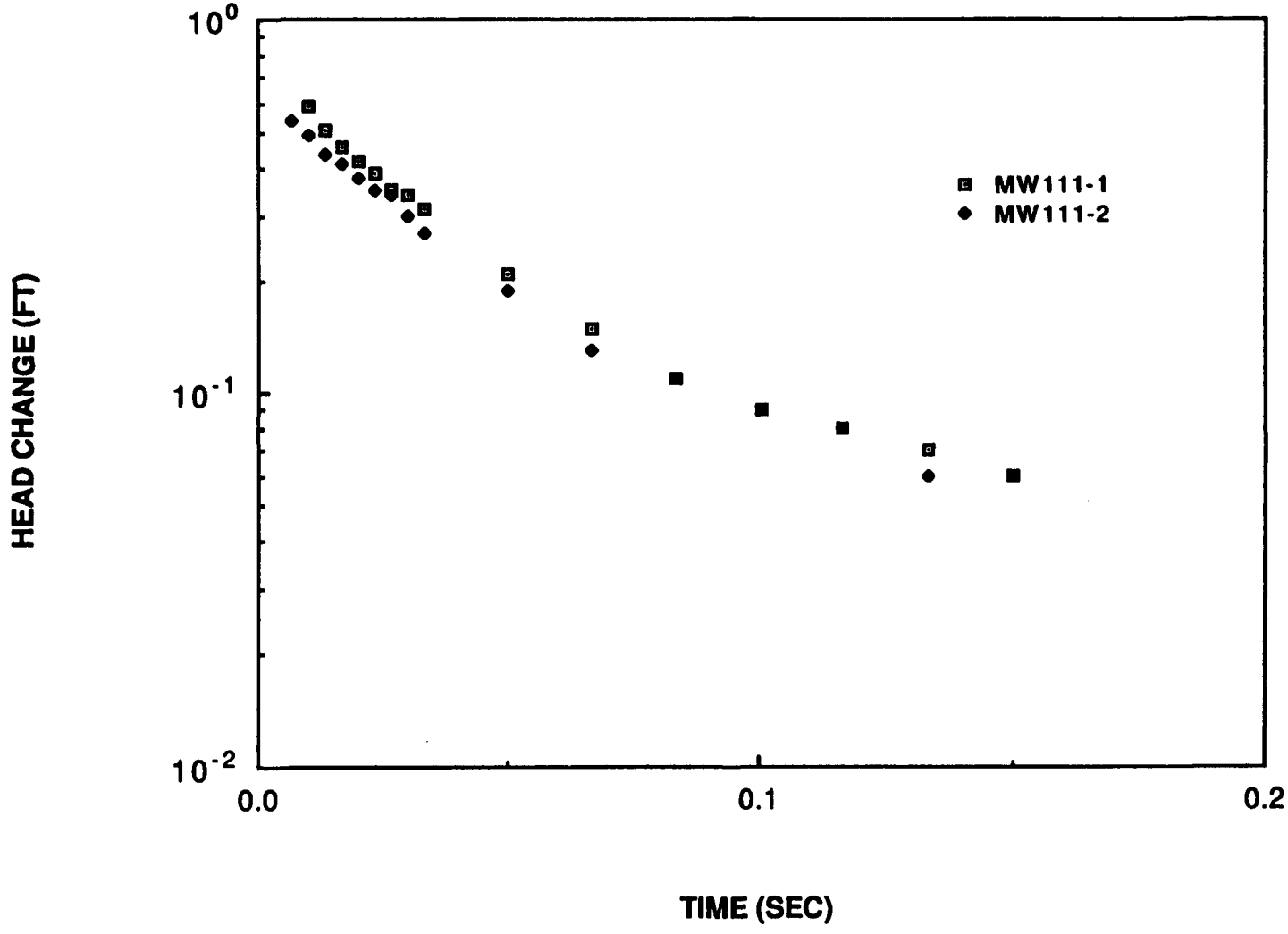
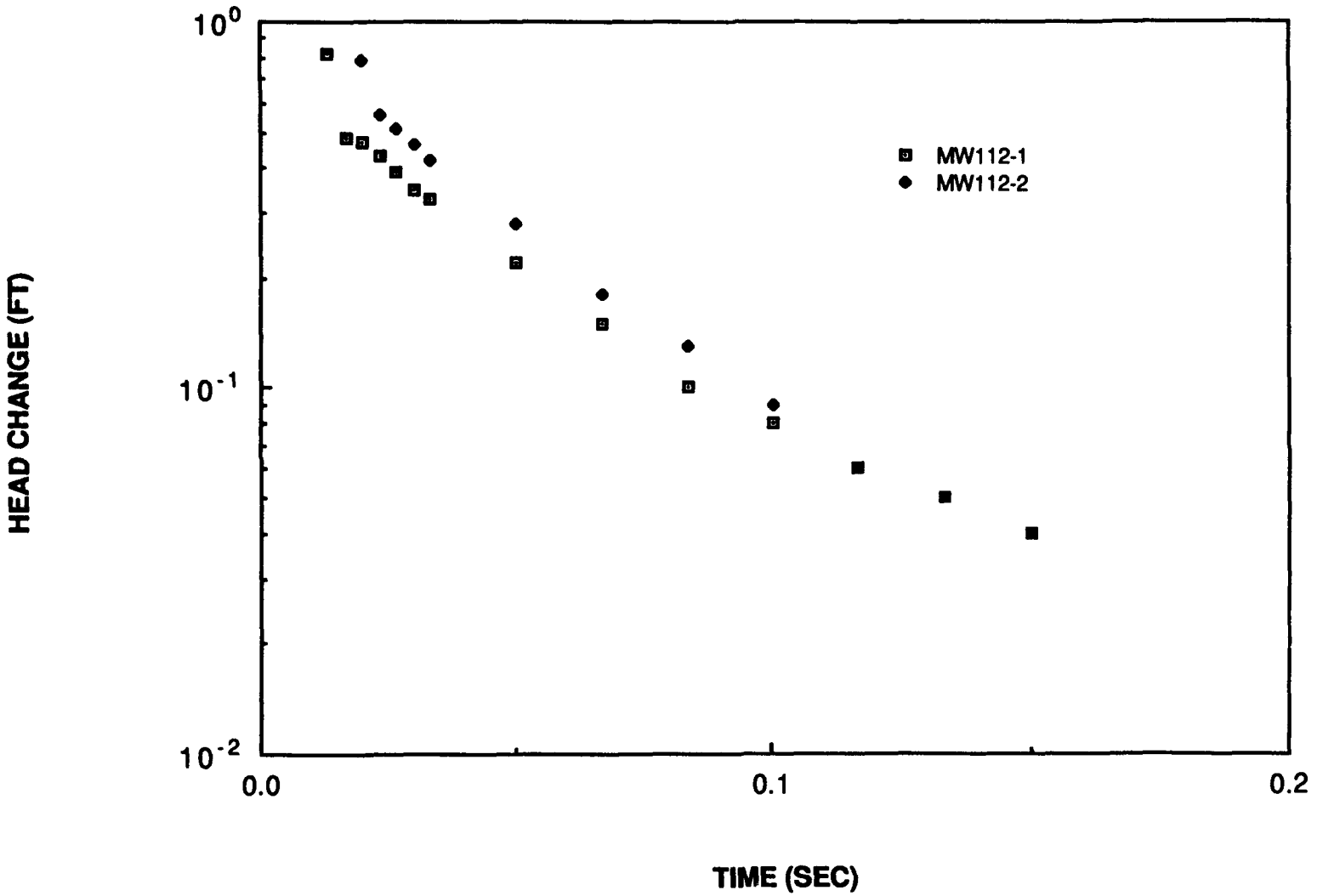
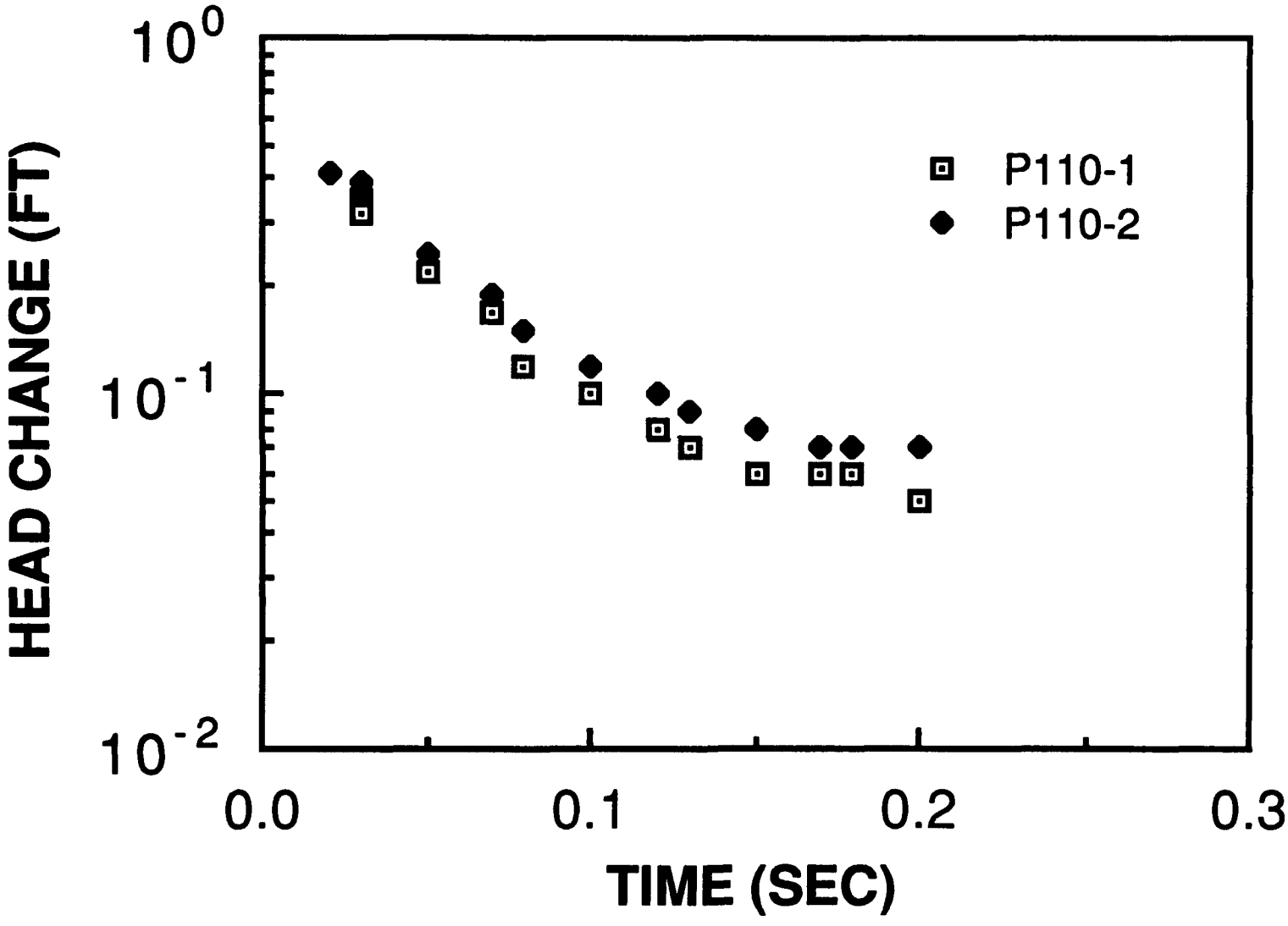
0.1
0.2
TIME (SEC)
MW107-1
MW107-2

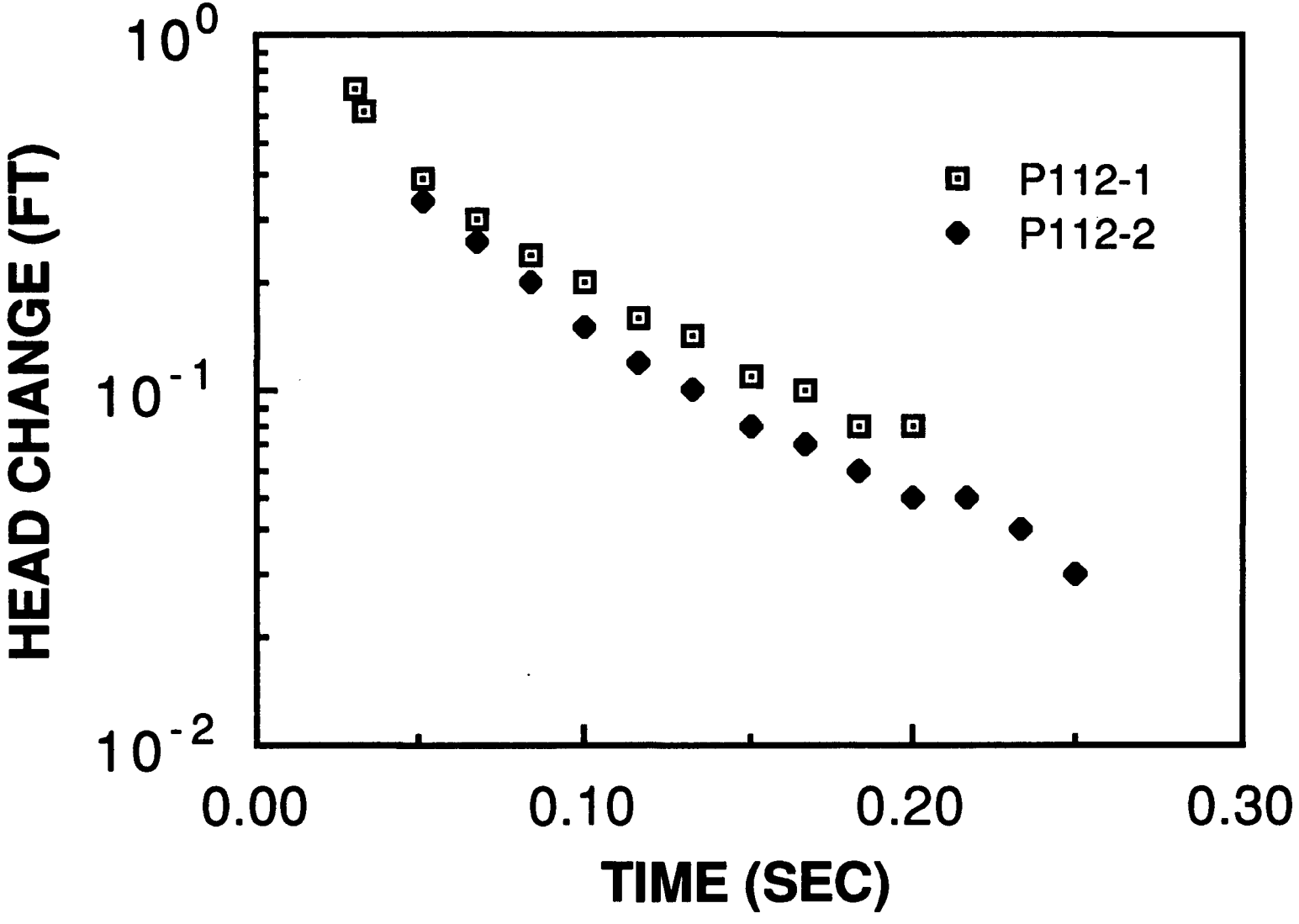

MW108-1 AND MW108-2
HEAD CHANGE (FT)
10^0
10^{-1}
10^{-2}
10^{-3}
0.0
0.2
0.4
0.6
0.8
TIME (SEC)
MW108-1
MW108-2


MW110-1 AND MW110-2
HEAD CHANGE (FT)
10^0
10^{-1}
10^{-2}
0.0
0.1
0.2
0.3
0.4
TIME (SEC)
MW110-1
MW110-2


MW111-1 AND MW111-2
HEAD CHANGE (FT)
10^0
10^{-1}
10^{-2}
0.0
0.1
0.2
TIME (SEC)
MW111-1
MW111-2


MW112-1 AND MW112-2
HEAD CHANGE (FT)
10^0
10^{-1}
10^{-2}
0.0
0.1
0.2
TIME (SEC)
MW112-1
MW112-2


P110-1 AND P110-2
HEAD CHANGE (FT)
10^0
10^{-1}
10^{-2}
0.0
0.1
0.2
0.3
TIME (SEC)
P110-1
P110-2


P112-1 AND P112-2
HEAD CHANGE (FT)
10^0
10^{-1}
10^{-2}
0.00
0.10
0.20
0.30
TIME (SEC)
P112-1
P112-2

APPENDIX E

SOIL ORGANIC VAPOR SURVEY DATA
(INCLUDING REPORT BY TRACER RESEARCH CORPORATION)

Tracer Research Corporation

SHALLOW SOIL GAS INVESTIGATION
AT THE
DELAWARE AIR NATIONAL GUARD BASE
NEW CASTLE, DELAWARE

SEPTEMBER 1988

PREPARED FOR:

E.C. Jordan Co.
261 Commercial Steet
Portland, Maine 04112

SUBMITTED BY:

Tracer Research Corporation

TABLE OF CONTENTS

INTRODUCTION

A shallow soil gas investigation was performed by Tracer Research Corporation at the Delaware Air National Guard Base (DANGB) in New Castle, Delaware. The investigation was conducted on September 27 through 30, 1988 under contract to E.C. Jordan Co. The purpose of the survey was to evaluate the presence or absence of volatile organic compounds (VOCs) in the subsurface.

For this survey, a total of 70 soil gas samples were collected and analyzed in the field. Samples were analyzed for the following compounds:

trichloroethane (TCA)
trichloroethylene (TCE)
tetrachloroethene (PCE)
benzene
toluene
ethylbenzene
xylenes
total hydrocarbons

Xylenes are reported as the total of the three xylene isomers and total hydrocarbons are approximately C4-C9 aliphatic, alicyclic and aromatic compounds. The compounds in this suite because of their suspected presence in the subsurface at particular sites on DANGB.

SHALLOW SOIL GAS INVESTIGATION - METHODOLOGY

Soil gas contaminant investigation refers to a method developed by TRC for investigating underground contamination from volatile organic chemicals (VOCs) such as industrial solvents, cleaning fluids and petroleum products by looking for their vapors in the shallow soil gas. The method involves pumping a small amount of soil gas out of the ground through a hollow probe driven into the ground and analyzing the gas for the presence of volatile contaminants. The presence of VOCs in shallow soil gas indicates the observed compounds may either be in the vadose zone near the probe or in groundwater below the probe. The soil gas technology is most effective in mapping low molecular weight halogenated solvent chemicals and petroleum hydrocarbons possessing high vapor pressures and low aqueous solubilities. These compounds readily partition out of the groundwater and into the soil gas as a result of their high gas/liquid partitioning coefficients. Once in the soil gas, VOCs diffuse vertically and horizontally through the soil to the ground surface where they dissipate into the atmosphere. The contamination acts as a source and the above ground atmosphere acts as a sink, and typically a concentration gradient develops between the two. The concentration gradient in soil gas between the source and ground surface may be locally distorted by hydrologic and geologic anomalies (e.g. clays, perched water); however, soil gas mapping generally remains effective because distribution of the contamination is usually broader in areal extent than the local geologic barriers and is defined using a large data base. The presence of geologic obstructions on a small scale tends to create anomalies in the soil gas-groundwater correlation, but generally does not obscure the broader areal picture of the contaminant distribution.

EQUIPMENT

Tracer Research Corporation utilized a one & 1/2-ton flat-bed Ford truck and analytical field trailer which was equipped with one gas chromatograph and two Spectra Physics SP4270 computing integrators. In addition, the trailer has one built-in gasoline powered generator which provides the electrical power (110 volts AC) to operate all of the gas chromatographic instruments and field equipment. A pneumatic hammer operated by a 230 cfm air compressor was used to drive probes into the ground. A specialized hydraulic mechanism consisting of two cylinders and a lever-arm was used to withdraw the sampling probes. A hand-operated hammer was used to assist in driving probes past cobbles and through unusually hard soil.

SAMPLING PROCEDURES

Sampling probes consist of 7-foot lengths of 3/4 inch diameter hollow steel pipe which are fitted with detachable drive points. Soil gas samples were collected after driving the steel probe to a depth between 2 and 6 feet into the ground. The above-ground end of the sampling probes were fitted with a steel reducer and a length of polyethylene tubing leading to a vacuum pump. To adequately purge the volume of air within the probe, 5 to 10 liters of gas were evacuated with a vacuum pump. During the soil gas evacuation, samples were collected in a glass syringe by inserting a syringe needle through a silicone rubber segment in the evacuation line and down into the steel probe. Ten milliliters of gas were collected for immediate analysis in the TRC analytical field van. Soil gas was subsampled (duplicate injections) in volumes ranging from 1 mL to 2 mL, depending on the VOC concentration at any particular location.

ANALYTICAL PROCEDURES

A Varian 3300 gas chromatograph equipped with a flame ionization detector (FID) and electron capture detector (ECD) was used for the soil gas analyses. The ECD was used for the analyses of TCA, TCE and PCE while the FID was used to analyze for benzene, toluene, ethylbenzene, xylenes and total hydrocarbons. Nitrogen was used as the carrier gas.

Detection limits for the compounds of interest are a function of the injection volume as well as the detector sensitivity for individual compounds. Thus, the detection limit varies with the sample size. Generally, the larger the injection size the greater the sensitivity. However, peaks for compounds of interest must be kept within the linear range of the analytical equipment. If any compound has a high concentration, it is necessary to use small injections, and in some cases to dilute the sample to keep it within linear range. This may cause increased detection limits for other compounds in the analyses. For example, during this investigation, a number of the soil gas samples had elevated concentrations of benzene. To bring the peak for this compound within linear range, it was necessary to make small injections. This had the effect of decreasing the detection limits for ethylbenzene and xylenes in these samples.

The detection limits range down to 0.0002 µg/L for compounds such as TCA and PCE depending on the conditions of the measurement, in particular, the sample size. If any component being analyzed is not detected, the detection limit for that compound in that analysis is given as a "less than" value (e.g. <0.0002 µg/L). Detection limits obtained from GC analyses are calculated from the current response factor, the sample size, and the estimated minimum peak size (area) that would have been visible under the conditions of the measurement.

QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES

Tracer Research Corporation's normal quality assurance procedures were followed in order to prevent any cross-contamination of soil gas samples.

- Steel probes are used only once during the day and then washed with high pressure soap and hot water spray or steam-cleaned to eliminate the possibility of cross-contamination. Enough probes are carried on each truck to avoid the need to reuse any during the day.

- Probe adaptors (steel reducer and tubing) are used once during the course of the day and cleaned at the end of each working day by baking in the GC oven. The tubing is replaced periodically as needed during the job to insure cleanliness and good fit.

- Silicone tubing (connecting the adaptor to the vacuum pump) is replaced as needed to insure proper sealing around the syringe needle. This tubing does not directly contact soil gas samples.

- Glass syringes are usually used for only one sample per day and are washed and baked out at night. If they must be used twice, they are purged with carrier gas (nitrogen) and baked out between probe samplings.

- Septa through which soil gas samples are injected into the chromatograph are replaced on a daily basis to prevent possible gas leaks from the chromatographic column.

- Analytical instruments are calibrated each day by the use of chemical standards prepared in water by serial dilution from commercially available pure chemicals. Calibration checks are also run after approximately every five soil gas sampling locations.

- 2 cc subsampling syringes are checked for contamination prior to sampling each day by injecting nitrogen carrier gas into the gas chromatograph.

- Prior to sampling each day, system blanks are run to check the sampling apparatus (probe, adaptor, 10 cc syringe) for contamination by drawing ambient air from above ground through the system and comparing the analysis to a concurrently sampled air analysis.

- All sampling and 2 cc subsampling syringes are decontaminated each day and no such equipment is reused before being decontaminated. Microliter size subsampling syringes are reused only after a nitrogen carrier gas blank is run to insure it is not contaminated by the previous sample.

- Soil gas pumping is monitored by a vacuum gauge to insure that an adequate gas flow from the vadose zone is maintained. A negative pressure (vacuum) of 2 in. Hg less than the maximum capacity of the pump (evacuation rate >0.02 cfm) usually indicates that a reliable gas sample cannot be obtained because the soil has a very low air permeability.

APPENDIX A: CONDENSED DATA

E.I. DUPONT/DELAWARE AIR NATIONAL GUARD/WILMINGTON, DELAWARE

Sample	Depth	Date	TCM (ug/l)	TCE (ug/l)	PCE (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethyl Benzene (ug/l)	Xylenes (ug/l)	Total Hydroc. (ug/l)
Air		09/27	<0.03	0.07	<0.0002	<0.1	<0.2	<0.2	<0.2	<0.1
SG-01	4'	09/27	0.004	0.02	0.0004	<0.1	<0.2	<0.2	<0.2	<0.1
SG-02	6'	09/27	0.02	0.04	0.02	<0.1	<0.2	<0.2	<0.2	<0.1
SG-03	6'	09/27	0.002	0.03	0.01	<0.1	<0.2	<0.2	<0.2	<0.1
SG-04	6'	09/27	0.0005	0.002	0.0008	<0.1	<0.2	<0.2	<0.2	<0.1
SG-05	6'	09/27	0.002	0.02	0.008	<0.1	<0.2	<0.2	<0.2	<0.1
SG-06	6'	09/27	0.03	0.1	0.05	<0.1	<0.1	<0.2	<0.2	<0.1
SG-07	6'	09/27	0.04	0.08	0.05	<0.1	<0.1	<0.2	<0.2	<0.1
SG-08	6'	09/27	0.02	0.3	0.004	8	50	<2	<1	760
SG-09	6'	09/27	0.03	0.1	0.2	<0.1	<0.1	<0.2	<0.2	<0.1
SG-10	6'	09/27	0.004	0.2	0.01	60	2,200	<3	<2	4,300
SG-11	7'	09/27	0.03	0.2	0.003	42	720	22	<1	1,500
SG-12	6'	09/27	0.004	0.08	0.002	<0.1	98	<0.2	<0.2	180
SG-13	6'	09/27	0.02	0.06	2	<0.1	<0.2	<0.2	<0.2	2
SG-14	6'	09/27	0.009	0.08	2	<0.1	<0.2	<0.2	<0.2	0.2
SG-15	6'	09/27	0.02	0.2	0.5	<0.1	<0.2	<0.2	<0.2	<0.1
Air		09/27	0.002	0.005	0.003	<0.1	<0.2	<0.2	<0.2	<0.1
SG-16	6'	09/27	0.004	0.08	0.1	<0.1	<0.2	<0.2	<0.2	<0.1
Air		09/27	0.004	0.005	0.002	<0.1	<0.2	<0.2	<0.2	<0.1
SG-17	6'	09/28	0.009	0.1	0.3	<0.1	<0.2	<0.2	<0.2	<0.1
SG-18	6'	09/28	0.01	0.08	3	<0.1	<0.2	<0.2	<0.2	<0.1
SG-19	6'	09/28	0.05	0.3	7	<0.1	<0.2	<0.2	<0.2	<0.1
SG-20	5'	09/28	0.0008	0.1	0.006	1,400	940	<2	<2	8,000
SG-21	6'	09/28	0.008	1	0.001	1,100	4,100	1,100	<4	24,000
SG-22	2.5'	09/28	0.002	0.01	0.001	<0.1	<0.2	<0.2	<0.2	8
SG-23	3'	09/28	0.002	0.09	0.002	4	13	<0.5	<0.6	150
SG-24	3'	09/28	0.002	0.01	0.0007	150	500	<1	<1	3,300
SG-25	2'	09/28	0.002	0.01	0.0007	58	70	<2	<2	560
SG-26	2'	09/28	0.01	0.05	0.0007	150	240	<1	<1	2,300
SG-27	2'	09/28	0.002	0.01	0.0004	<0.2	<0.2	<0.2	<0.2	<0.2
SG-28	3'	09/28	0.001	0.008	0.0004	<0.2	<0.2	<0.2	<0.2	<0.2
SG-29	4'	09/28	<0.0005	0.01	<0.0003	500	1,200	<4	<4	7,900
SG-30	2'	09/28	0.005	0.01	0.009	<0.2	<0.2	<0.2	<0.2	<0.2

Tracer Research Corporation

Notations:
I interference with adjacent peaks
NA not analyzed

Analyzed by S. Camp

Checked by S. Norris

Proofed by L. Lapland

E.I. DUPONT/DELAWARE AIR NATIONAL GUARD/WILMINGTON, DELAWARE

Sample	Depth	Date	TCA (ug/l)	TCE (ug/l)	PCE (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethyl Benzene (ug/l)	Xylenes (ug/l)	Total Hydroc. (ug/l)
SG-31	4'	09/28	<0.0005	0.008	0.001	<0.2	<0.2	<0.2	<0.2	<0.2
SG-32	4'	09/28	<0.0005	0.008	0.002	<0.2	<0.2	<0.2	<0.2	<0.2
SG-33	4'	09/28	0.0008	0.2	0.02	26	88	<1	<1	490
SG-34	6'	09/28	0.002	0.009	0.01	<0.2	<0.2	<0.2	<0.2	<0.2
SG-35	5'	09/28	0.002	0.08	0.0004	480	620	<2	<2	6,200
SG-36	5'	09/28	0.003	0.2	0.0004	690	720	<10	<10	8,900
SG-37	6'	09/28	0.02	0.1	0.0004	880	1,200	<5	<5	13,000
SG-38	6'	09/28	0.001	0.2	0.0004	480	800	<1	<10	7,400
Air		09/28	0.001	0.003	0.0007	<0.2	<0.2	<0.2	<0.2	<0.2
SG-39	6'	09/29	0.04	0.06	0.02	<0.1	<0.2	<0.2	<0.2	<0.1
SG-40	6'	09/29	0.02	0.03	0.03	<0.1	<0.2	<0.2	<0.2	<0.1
SG-41	6'	09/29	0.002	0.008	0.004	<0.1	<0.2	<0.2	<0.2	<0.1
SG-42	5'	09/29	0.002	0.008	0.002	<0.1	<0.2	<0.2	<0.2	<0.1
SG-43	6'	09/29	0.005	0.01	0.04	<0.1	<0.2	<0.2	<0.2	<0.1
SG-44	6'	09/29	0.2	0.4	0.03	<0.1	<0.2	<0.2	<0.2	<0.1
SG-45	6'	09/29	0.03	0.06	0.03	<0.1	<0.2	<0.2	<0.2	<0.1
SG-46	6'	09/29	0.08	0.2	0.02	<0.1	<0.2	<0.2	<0.2	<0.1
SG-47	6'	09/29	0.07	0.07	0.1	<0.1	<0.2	<0.2	<0.2	<0.1
SG-48	6'	09/29	0.02	0.04	0.04	<0.1	<0.2	<0.2	<0.2	<0.1
SG-49	6'	09/29	0.008	0.01	0.006	<0.1	<0.2	<0.2	<0.2	<0.1
SG-50	6'	09/29	0.006	0.02	0.07	<0.1	<0.2	<0.2	<0.2	<0.1
SG-51	6'	09/29	0.2	0.4	0.009	<0.1	<0.2	<0.2	<0.2	<0.1
SG-52	6'	09/29	0.04	0.07	0.05	<0.1	<0.2	<0.2	<0.2	<0.1
SG-53	6'	09/29	0.01	0.02	0.04	<0.1	<0.2	<0.2	<0.2	<0.1
SG-54	6'	09/29	0.008	0.02	0.03	<0.1	<0.2	<0.2	<0.2	<0.1
SG-55	6'	09/29	0.01	0.02	0.02	<0.1	<0.2	<0.2	<0.2	<0.1
SG-56	6'	09/29	0.01	0.02	0.05	<0.1	<0.2	<0.2	<0.2	<0.1
Air		09/29	0.01	0.02	0.0004	<0.1	<0.2	<0.2	<0.2	<0.1
SG-57	6'	09/30	0.01	0.2	<0.0003	240	1,200	<2	30	3,400
SG-58	6'	09/30	0.02	0.1	0.001	2,800	9,000	<4	240	38,000
SG-59	6'	09/30	0.02	0.2	0.002	1,300	3,800	<4	140	20,000
SG-60	6'	09/30	0.03	0.2	0.006	<0.1	<0.1	<0.2	<0.2	<0.1

Tracer Research Corporation

Notations:
I interference with adjacent peaks
NH not analyzed

Analyzed by S. Camp

Checked by S. Norris

Proofed by L. Laplander

E.G. JORDAN/DELAWARE AIR NATIONAL GUARD/WILMINGTON, DELAWARE

Sample	Depth	Date	TCA (ug/l)	TCE (ug/l)	PCE (ug/l)	Benzene (ug/l)	Toluene (ug/l)	Ethyl Benzene (ug/l)	Xylenes (ug/l)	Total Hydroc. (ug/l)
SG 61	6'	09/30	0.002	0.03	0.06	2,600	14,000	<4	<4	44,000
Air		09/30	0.001	0.01	<0.0003	<0.1	<0.1	<0.2	<0.2	<0.1
SG 62	6'	09/30	0.004	0.03	0.05	4,000	26,000	<4	<4	58,000
SG 63	6'	09/30	0.003	0.01	0.03	1,800	5,400	<4	<4	30,000
SG 64	6'	09/30	0.008	0.06	0.004	4,900	<0.2	<4	<4	26,000
SG 65	6'	09/30	0.02	0.05	0.004	<0.1	<0.2	<0.2	<0.2	<0.1
SG 66	6'	09/30	<0.0004	0.004	0.0008	<0.1	<0.2	<0.2	<0.2	<0.1
SG 67	6'	09/30	0.001	0.006	0.002	300	820	<0.4	<0.4	1,800
SG 68	6'	09/30	<0.0004	0.006	<0.0003	<0.1	<0.2	<0.2	<0.2	0.9
SG 69	4'	09/30	0.001	0.004	0.0008	<0.1	<0.2	<0.2	<0.2	<0.1
SG 70	6'	09/30	<0.0004	0.004	0.0007	190	870	<0.2	<0.2	2,400
Air		09/30	<0.0004	<0.001	<0.0003	<0.1	<0.1	<0.2	<0.2	<0.1

Tracer Research Corporation

Notations:
I interference with adjacent peaks
NA not analyzed

Analyzed by S. Camp

Checked by S. Norris

Proofed by L. Lombardi

APPENDIX F

LABORATORY ANALYTICAL SOIL DATA QUALITY ASSURANCE, AND DATA QUALIFIERS

APPENDIX F-1 - APPENDIX DATA
APPENDIX F-2 - VALIDATED DATA

QUALITY ASSURANCE

Data Quality Verification

All organic and inorganic analytical data for the groundwater, soil, and sediment samples were generated by the protocols specified by the USEPA for the Contract Laboratory Program (CLP). The stringent quality control procedures outlined in the CLP protocols provide a preliminary level of assurance of data quality. In addition, all laboratory deliverables (analytical results and raw data) were subjected to a Level IV review by both experienced data reviewers and a project chemist using procedures specified in the USEPA "Functional Guidelines for Evaluating Organic Analyses" (HQ-8410-01, May 28, 1985) and the "Functional Guidelines for Evaluating Inorganic Analyses" and included the January 1987 USEPA Region I revisions. The protocols specified in the validation guidelines were used to evaluate data utility. Data are considered acceptable if the quality control problems are minor and do not affect data utility as outlined in the validation guidelines. Exceptions are noted where QC problems result in unacceptable data. Level IV data quality represents confirmational data characterized by rigorous quality control and validation procedures and is adequate to support Risk Assessment, enforcement, and engineering alternative design. The validation guidelines used specify a systematic procedure for evaluating laboratory data, including holding times, blank analysis, surrogate recoveries, matrix spike results, GC/MS tuning, instrument calibration, compound identification, and method performance. The definitions of the data qualifiers (as well as laboratory qualifiers) used in reporting the analytical data are presented in Table I.

All laboratory deliverables, chain-of-custody forms, and validation worksheets are maintained on file by Jordan and are available for inspection.

A Level III review was performed for the results of the petroleum hydrocarbons analysis and for all drum sample analyses. Level III represents data generated using USEPA-approved methods but not specifically the CLP protocols and results in data to be used for source, extent, or characterization, and to support engineering treatability studies. This data evaluation included method blanks, holding times, and calibration where provided.

Volatile Organics

In general, the volatile organics data was acceptable and may be used without qualification. In many cases, the non-detected results for 2-butanone were qualified as unusable (R) because the minimum response criteria for calibration were not met. These rejected values indicate a problem with instrument sensitivity for 2-butanone and that the actual detection limit can not be evaluated. However, these non-detected values may be considered valid if, based on site history and previous studies, this compound is not expected to be present. Positive results for 2-butanone are qualitatively estimated (J qualifier) as may be used in the SI. Because of its solubility, this compound is extremely difficult to analyze by the purge & trap procedure used by this method. Therefore, this low response is typical for laboratories in the CLP.

Some samples exhibited high levels of benzene, ethylbenzene, and xylenes, but no toluene was detected. Review of the raw data did not uncover any problems that would account for this inconsistency. Further study would be required to investigate possible causes for this behavior.

Water field duplicate results were acceptable. Some differences were noted between soil results but seem to be attributable to a non-homogeneous matrix.

Semivolatile Organics

In general, the semivolatile organics data were acceptable and may be used without qualification. Two samples (05GW046XXX01XX and 05GW050XXX01XX) exhibited poor surrogate recoveries for all acid surrogates. The laboratory reanalyzed these samples and the poor recoveries were confirmed, indicating a probable matrix interference. All non-detected acid results in these samples were qualified as unusable (R). These rejected results should not be used to determine the absence of the acid extractable semivolatile organics, since the low recoveries indicate that these compounds are not easily recovered from this matrix. Additional samples would be needed to confirm their presence or absence.

Soil field duplicate results were acceptable. Differences were observed in water results and may result from analytical difficulties caused by the high levels of organics present.

Inorganics

In general, inorganics results were acceptable and may be used without qualification.

Soil field duplicate results were acceptable. Water results for lead in 03GW108XX showed poor agreement (88 versus 3.2 µg/ℓ). Review of the raw data did not indicate any analytical problems. Both samples were analyzed undiluted, and only one required further dilution for off-scale results. Analytical spikes were acceptable in all cases. Based on this information, the problem may be result of a sampling problem. Additional data would be needed to accurately assess the presence of lead.

Blank Analyses

All samples were evaluated for blank contamination (laboratory and sampling) in accordance with the validation guidelines, and these validated results are reported in the data summary tables. The blank results are summarized below. A total of 27 method blanks were analyzed with this sample set. Of these, eight were analyzed as low water samples, 14 as low soil, and five as medium soil. The results presented in Table II are typical for method blank data. Methylene chloride and acetone were the most frequently observed contaminants and were all within the established CLP limits for blank contamination. The contaminants detected in the medium-level soil blanks were all less than the contract required detection limit (CRDL).

A total of 18 semivolatile method blanks were analyzed (7 low water and 11 low soil). The results presented in Table II are typical for method blank data. The only contaminant found was bis(2-ethylhexyl)phthalate at levels less than the CLP limit. All soil values were less than the CRDL.

No lead contamination was observed in the inorganics blanks.

The frequency of QC samples collected is summarized in Table F-3, and the results for these samples are presented in Appendices F and G.

TABLE F-1
DATA QUALIFIERS

Organic Data Qualifiers (Flags)

J - Indicates an estimated value when the value is below the contract required detection limit (CRDL) or all quality assurance criteria were not met during analysis.

JJ - Validation flag for values below CRDL only.

U - Indicates the parameter was analyzed for but not detected at the concentration value preceding the qualifier.

UJ - Nondetect result was estimated; QC not acceptable.

B - Indicates the analyte was detected in both the same and associated method blank.

UJB - Nondetect; detection limit was adjusted for blank contamination.

E - Indicates that the concentration reported exceeded the calibration range of the analysis method and that sample should have been diluted and reanalyzed.

D - Indicates that the sample required dilution prior to analysis to bring the detected value within the calibration range of the method of analysis.

R - Indicates that data is not useable because quality control criteria were not met.

UR - Nondetected result was rejected; QC not acceptable.

X - Indicates that a combination of flags were required or that the sample required additional notes not covered by other flags.

Inorganic Data Qualifiers (Flags)

E - The reported value is estimated because of the presence of interference. An explanatory note must be included under Comments on the cover page (if the problem applies to all samples), or on the specific FORM I-IN (if it is an isolated problem).

M - Duplicate injection precision not met.

N - Spiked sample recovery not within control limits.

S - The reported value was determined by the Method of Standard Additions.

W - Postdigestion spike for Furnace Atomic Absorption analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

[] - Value reported is less than the CRDL.

* - Duplicate analysis not within control limits.

+ - Correlation coefficient for the Method of Standard Addition is less than 0.995.

Others

The following letters or notations may appear on the tables:

NR - Analysis not requested.

NA - Analyte requested but not analyzed.

-- - Analyte analyzed for but not detected.

TABLE F-2
VOLATILE METHOD BLANK SUMMARY
FREQUENCY/CONCENTRATION RANGE (ug/l or ug/kg)

Compound	Low Water (8 total)	Low Soil (14 total)	Medium Soil (5 total)
methylene chloride	2(1)	14(3-20)	5(150-390)
acetone	5(1-8)	14(9-30)	2(360-740)
chloroform	--	3(1-3)	--
chlorobenzene	--	--	1(130)
toluene	1(2)	--	--
styrene	--	--	1(150)
xylenes	--	--	2(410-480)
2-butanone	--	1(5)	--

TABLE III
SEMIVOLATILE METHOD BLANK SUMMARY
FREQUENCY/CONCENTRATION RANGE (ug/l or ug/kg)

Compound	Low Water (7 total)	Low Soil (11 total)
bis(2-ethylhexyl)phthalate	4(6-29)	2(49-57)

TABLE F-3
FREQUENCY OF QC SAMPLES

MATRIX	TRIP BLANKS	DUPLICATES	SAMPLE BLANKS	FILTRATION BLANKS
14 Water Samples	3/20%	2/10%	2/10%	2/10%
32 Soil Samples	--	4/10%	2/5%	--

APPENDIX F-1

APPENDIX DATA

Laboratory Report of Analysis

SAMPLE ID:	01SB101X1401XX	01SB101X2001XX	01SB102X0801XX	01SB102X2101XX	01SB102X2601XX	01SS101X0101XX	01SS102X0101XX	01SS102X0101XD
LAB NUMBER:	220811	220812	221233	221234	221235	222878	222882	222880
DATE SAMPLED:	10/05/88	10/05/88	10/06/88	10/06/88	10/06/88	10/17/88	10/17/88	10/17/88
MATRIX:	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL							
Chloromethane	10	12 U	11 U	11 U	11 U	12 U	11 U	11 U	11 U
Bromomethane	10	12 U	11 U	11 U	11 U	12 U	11 U	11 U	11 U
Vinyl chloride	10	12 U	11 U	11 U	11 U	12 U	11 U	11 U	11 U
Chloroethane	10	12 U	11 U	11 U	11 U	12 U	11 U	11 U	11 U
Methylene chloride	5	14 B	9 B	10 B	12 B	10 B	8 B	11 B	9 B
Acetone	10	31 B	17 B	27 B	65 B	52 B	10 JB	20 B	11 B
Carbon disulfide	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
1,1-Dichloroethene	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
1,1-Dichloroethane	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
1,2-Dichloroethene(Total)	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Chloroform	5	6 U	6 U	2 J	2 J	2 J	5 U	5 U	5 U
1,2-Dichloroethane	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
2-Butanone	10	12 U	11 U	11 U	11 U	12 U	11 U	11 U	11 U
1,1,1-Trichloroethane	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Carbon tetrachloride	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Vinyl acetate	10	12 U	11 U	11 U	11 U	12 U	11 U	11 U	11 U
Bromodichloromethane	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
1,2-Dichloropropane	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Cis-1,3-Dichloropropene	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Trichloroethene	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Dibromochloromethane	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
1,1,2-Trichloroethane	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Benzen	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Trans- ,3-Dichloropropene	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Bromoform	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
4-Methyl-2-pentanone	10	12 U	11 U	11 U	11 U	12 U	11 U	11 U	11 U
2-Hexanone	10	12 U	11 U	11 U	11 U	12 U	11 U	11 U	11 U
Tetrachloroethene	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Toluene	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Chlorobenzene	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Ethylbenzene	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Styrene	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Xylenes (Total)	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Dilution Factor		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Percent Solids		83	87	94	87	85	95	92	92
Laboratory Method Blank		GH021136C10	GH021136C10	GH021584B10	GH021584B10	GH021584B10	GH022983B12	GH022983B12	GH022983B12

Laboratory Report of Analysis

SAMPLE ID: 01SS103X0101XX
LAB NUMBER: 222883
DATE SAMPLED: 10/17/88
MATRIX: Soil

VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL	
Chloromethane	10	11 U
Bromomethane	10	11 U
Vinyl chloride	10	11 U
Chloroethane	10	11 U
Methylene chloride	5	48 B
Acetone	10	110 B
Carbon disulfide	5	6 U
1,1-Dichloroethene	5	6 U
1,1-Dichloroethane	5	6 U
1,2-Dichloroethene(Total)	5	6 U
Chloroform	5	6 U
1,2-Dichloroethane	5	6 U
2-Butanone	10	11 U
1,1,1-Trichloroethane	5	6 U
Carbon tetrachloride	5	6 U
Vinyl acetate	10	11 U
Bromodichloromethane	5	6 U
1,2-Dichloropropane	5	6 U
Cis-1,3-Dichloropropene	5	6 U
Trichloroethene	5	6 U
Dibromochloromethane	5	6 U
1,1,2-Trichloroethane	5	6 U
Benzene	5	6 U
Trans-1,3-Dichloropropene	5	6 U
Bromoform	5	6 U
4-Methyl-2-pentanone	10	11 U
2-Hexanone	10	11 U
Tetrachloroethene	5	6 U
1,1,2,2-Tetrachloroethane	5	6 U
Toluene	5	6 U
Chlorobenzene	5	6 U
Ethylbenzene	5	6 U
Styrene	5	6 U
Xylenes (Total)	5	6 U
Dilution Factor		1.0
Percent Solids		90

Laboratory Method Blank GH022983B12

Laboratory Report of Analysis

SAMPLE ID:	01SB101X1401XX	01SB101X2001XX	01SB102X0801XX	01SB102X2101XX	01SB102X2601XX	01SS101X0101XX	01SS102X0101XX	01SS102X0101XD
LAB NUMBER:	220811	220812	221233	221234	221235	222878	222882	222880
DATE SAMPLED:	10/04/88	10/04/88	10/05/88	10/05/88	10/05/88	10/16/88	10/16/88	10/16/88
MATRIX:	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL							
Phenol	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
bis(2-Chloroethyl)ether	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
2-Chlorophenol	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
1,3-Dichlorobenzene	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
1,4-Dichlorobenzene	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Benzyl alcohol	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
1,2-Dichlorobenzene	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
2-Methylphenol	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
bis(2-Chloroisopropyl)ether	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
4-Methylphenol	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
N-Nitroso-di-n-propylamine	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Hexachloroethane	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Nitrobenzene	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Isophorone	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
2-Nitrophenol	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
2,4-Dimethylphenol	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Benzoic acid	1600	1900 U	1800 U	1700 U	1800 U	1900 U	1700 U	1700 U	3500 U
bis(2-Chloroethoxy)methane	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
2,4-Dichlorophenol	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
1,2,4-Trichlorobenzene	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Naphthalene	330	400 U	370 U	350 U	380 U	390 U	350 U	39 J	720 U
4-Chloroaniline	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Hexachlorobutadiene	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
4-Chloro-3-methylphenol	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
2-Methylnaphthalene	330	400 U	370 U	350 U	380 U	390 U	48 J	63 J	720 U
Hexachlorocyclopentadiene	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
2,4,6-Trichlorophenol	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
2,4,5-Trichlorophenol	1600	1900 U	1800 U	1700 U	1800 U	1900 U	1700 U	1700 U	3500 U
2-Chloronaphthalene	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
2-Nitroaniline	1600	1900 U	1800 U	1700 U	1800 U	1900 U	1700 U	1700 U	3500 U
Dimethyl phthalate	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Acenaphthylene	330	400 U	370 U	350 U	380 U	390 U	350 U	41 J	720 U
2,6-Dinitrotoluene	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U

X = Denotes the coelution of benzo(b)fluoranthene and benzo(k)fluoranthene.

Laboratory Report of Analysis

SAMPLE ID:		01SB101X1401XX	01SB101X2001XX	01SB102X0801XX	01SB102X2101XX	01SB102X2601XX	01SS101X0101XX	01SS102X0101XX	01SS102X0101XD
LAB NUMBER:		220811	220812	221233	221234	221235	222878	222882	222880
DATE SAMPLED:		10/04/88	10/04/88	10/05/88	10/05/88	10/05/88	10/16/88	10/16/88	10/16/88
MATRIX:		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL								
3-Nitroaniline	1600	1900 U	1800 U	1700 U	1800 U	1900 U	1700 U	1700 U	3500 U
Acenaphthene	330	400 U	370 U	350 U	380 U	390 U	350 U	54 J	92 J
2,4-Dinitrophenol	1600	1900 U	1800 U	1700 U	1800 U	1900 U	1700 U	1700 U	3500 U
4-Nitrophenol	1600	1900 U	1800 U	1700 U	1800 U	1900 U	1700 U	1700 U	3500 U
Dibenzofuran	330	400 U	370 U	350 U	380 U	390 U	350 U	39 J	720 U
2,4-Dinitrotoluene	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Diethyl phthalate	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
4-Chlorophenyl phenyl ether	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Fluorene	330	400 U	370 U	350 U	380 U	390 U	350 U	59 J	720 U
4-Nitroaniline	1600	1900 U	1800 U	1700 U	1800 U	1900 U	1700 U	1700 U	3500 U
4,6-Dinitro-2-methylphenol	1600	1900 U	1800 U	1700 U	1800 U	1900 U	1700 U	1700 U	3500 U
N-Nitrosodiphenylamine(1)	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
4-Bromophenyl phenyl ether	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Hexachlorobenzene	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Pentachlorophenol	1600	1900 U	1800 U	1700 U	1800 U	1900 U	1700 U	1700 U	3500 U
Phenanthrene	330	400 U	370 U	350 U	380 U	390 U	460	1200	830
Anthracene	330	400 U	370 U	350 U	380 U	390 U	83 J	240 J	150 J
Di-n-butyl phthalate	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Fluoranthene	330	400 U	370 U	350 U	380 U	390 U	940	2500	1400
Pyrene	330	400 U	370 U	350 U	380 U	390 U	910	2100	1300
Butyl benzyl phthalate	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
3,3'-Dichlorobenzidine	660	800 U	740 U	700 U	760 U	780 U	690 U	720 U	1400 U
Benzo(a)anthracene	330	400 U	370 U	350 U	380 U	390 U	420	1100	700 J
Chrysene	330	400 U	370 U	350 U	380 U	390 U	460	1300	870
bis(2-Ethylhexyl)phthalate	330	400 U	370 U	350 U	46 J	390 U	450 B	1500 B	290 JB
Di-n-octyl phthalate	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Benzo(b)fluoranthene	330	400 U	370 U	350 U	380 U	390 U	960 X	2600 X	860
Benzo(k)fluoranthene	330	400 U	370 U	350 U	380 U	390 U	960 XJ	2600 X	750
Benzo(a)pyrene	330	400 U	370 U	350 U	380 U	390 U	430	1100	680 J
Indeno(1,2,3-cd)pyrene	330	400 U	370 U	350 U	380 U	390 U	270 J	550	390 J
Dibenzo(a,h)anthracene	330	400 U	370 U	350 U	380 U	390 U	84 J	220 J	110 J
Benzo(g,h,i)perylene	330	400 U	370 U	350 U	380 U	390 U	300 J	620	360 J
Dilution Factor		1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0
Percent Solids		83	87	94	87	85	95	92	92
Laboratory Method Blank		GH021040A02	GH021040A02	GH021332A02	GH021332A02	GH021332A02	G2J22935C02	G2J22935C02	G2J22935B07
Petroleum Hydrocarbons (mg/kg)	50	60 U	60 U	50 U	60 U	60 U	140	180	390
Percent Solids		83	87	96	88	84	95	91	92

X = Denotes the coelution of benzo(b)fluoranthene and benzo(k)fluoranthene.

Laboratory Report of Analysis

SAMPLE ID:	01SS103X0101XX
LAB NUMBER:	222883
DATE SAMPLED:	10/16/88
MATRIX:	Soil

SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL	
Phenol	330	370 U
bis(2-Chloroethyl)ether	330	370 U
2-Chlorophenol	330	370 U
1,3-Dichlorobenzene	330	370 U
1,4-Dichlorobenzene	330	370 U
Benzyl alcohol	330	370 U
1,2-Dichlorobenzene	330	370 U
2-Methylphenol	330	370 U
bis(2-Chloroisopropyl)ether	330	370 U
4-Methylphenol	330	370 U
N-Nitroso-di-n-propylamine	330	370 U
Hexachloroethane	330	370 U
Nitrobenzene	330	370 U
Isophorone	330	370 U
2-Nitrophenol	330	370 U
2,4-Dimethylphenol	330	370 U
Benzoic acid	1600	1800 U
bis(2-Chloroethoxy)methane	330	370 U
2,4-Dichlorophenol	330	370 U
1,2,4-Trichlorobenzene	330	370 U
Naphthalene	330	370 U
4-Chloroaniline	330	370 U
Hexachlorobutadiene	330	370 U
4-Chloro-3-methylphenol	330	370 U
2-Methylnaphthalene	330	370 U
Hexachlorocyclopentadiene	330	370 U
2,4,6-Trichlorophenol	330	370 U
2,4,5-Trichlorophenol	1600	1800 U
2-Chloronaphthalene	330	370 U
2-Nitroaniline	1600	1800 U
Dimethyl phthalate	330	370 U
Acenaphthylene	330	370 U
2,6-Dinitrotoluene	330	370 U

X = Denotes the coelution of benzo(b)fluoranthene and benzo(k)fluoranthene.

Laboratory Report of Analysis

SAMPLE ID:	01SS103X0101XX
LAB NUMBER:	222883
DATE SAMPLED:	10/16/88
MATRIX:	Soil

SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL		
3-Nitroaniline	1600	1800	U
Acenaphthene	330	370	U
2,4-Dinitrophenol	1600	1800	U
4-Nitrophenol	1600	1800	U
Dibenzofuran	330	370	U
2,4-Dinitrotoluene	330	370	U
Diethyl phthalate	330	370	U
4-Chlorophenyl phenyl ether	330	370	U
Fluorene	330	370	U
4-Nitroaniline	1600	1800	U
4,6-Dinitro-2-methylphenol	1600	1800	U
N-Nitrosodiphenylamine(1)	330	370	U
4-Bromophenyl phenyl ether	330	370	U
Hexachlorobenzene	330	370	U
Pentachlorophenol	1600	1800	U
Phenanthrene	330	370	U
Anthracene	330	370	U
Di-n-butyl phthalate	330	370	U
Fluoranthene	330	110	JJ
Pyrene	330	140	JJ
Butyl benzyl phthalate	330	370	U
3,3'-Dichlorobenzidine	660	730	U
Benzo(a)anthracene	330	48	JJ
Chrysene	330	110	JJ
bis(2-Ethylhexyl)phthalate	330	1000	JB
Di-n-octyl phthalate	330	370	U
Benzo(b)fluoranthene	330	250	JJX
Benzo(k)fluoranthene	330	250	JJX
Benzo(a)pyrene	330	93	JJ
Indeno(1,2,3-cd)pyrene	330	70	JJ
Dibenzo(a,h)anthracene	330	370	U
Benzo(g,h,i)perylene	330	89	JJ
Dilution Factor		1.0	
Percent Solids		90	
Laboratory Method Blank		G2J22935C02	
Petroleum Hydrocarbons (mg/kg)	50	300	
Percent Solids		92	

X = Denotes the coelution of benzo(b)fluoranthene and benzo(k)fluoranthene.

Laboratory Report of Analysis

	SAMPLE ID:	01SB101X1401XX	01SB101X2001XX	01SB102X0801XX	01SB102X2101XX	01SB102X2601XX	01SS101X0101XX	01SS102X0101XD	01SS102X0101XX
	LAB NUMBER:	220815	220816	221238	221239	221240	222893	222894	222895
	DATE SAMPLED:	10/05/88	10/05/88	10/06/88	10/06/88	10/06/88	10/17/88	10/17/88	10/17/88
	MATRIX:	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
METALS COMPOUNDS UNITS: mg/kg	ANALYTICAL METHOD	CRDL							
Lead	P/F	1	5.9 *	1.9 *	2 *	2.7 *	1.9 *	57 *	96 *	88 *
Dilution Factor										
Percent Solids			83	87	94	87	85	95	92	92
Laboratory Method Blank			15410B	15410B	15410B	15410B	15410B	15409A	15409A	15409A

Laboratory Report of Analysis

SAMPLE ID:	01SS103X0101XX
LAB NUMBER:	222896
DATE SAMPLED:	10/17/88
MATRIX:	Soil

METALS COMPOUNDS UNITS: mg/kg	ANALYTICAL METHOD	CRDL	
Lead	P/F	1	13
Dilution Factor			
Percent Solids			90
Laboratory Method Blank			15409A

Laboratory Report of Analysis

	SAMPLE ID:	02SB103X0401XX	02SB103X1601XX	02SB103X2401XX	02SB104X1601XX	02SB104X1601XD	02SB104X2101XX	02SB105X2601XX	02SB105X3101XX
	LAB NUMBER:	222571	222574	222577	222888	222886	222889	221390	221394
	DATE SAMPLED:	10/14/88	10/14/88	10/14/88	10/17/88	10/17/88	10/17/88	10/07/88	10/07/88
	MATRIX:	Soil	Soil	Soil *	Soil	Soil	Soil	Soil	Soil
VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL								
Chloromethane	10	11 U	10 U	1500 U	10 U	11 U	11 U	12 U	12 U
Bromomethane	10	11 U	10 U	1500 U	10 U	11 U	11 U	12 U	12 U
Vinyl chloride	10	11 U	10 U	1500 U	10 U	11 U	11 U	12 U	12 U
Chloroethane	10	11 U	10 U	1500 U	10 U	11 U	11 U	12 U	12 U
Methylene chloride	5	18 B	12 B	750 U	11 B	13 B	12 B	17 B	11 B
Acetone	10	42 B	27 B	1500 U	40 B	30 B	37 B	16 B	22 B
Carbon disulfide	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
1,1-Dichloroethene	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
1,1-Dichloroethane	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
1,2-Dichloroethene(Total)	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Chloroform	5	4 JB	2 JB	750 U	2 J	5 U	5 U	1 J	1 J
1,2-Dichloroethane	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
2-Butanone	10	11 U	10 U	1500 U	10 U	11 U	11 U	12 U	12 U
1,1,1-Trichloroethane	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Carbon tetrachloride	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Vinyl acetate	10	11 U	10 U	1500 U	10 U	11 U	11 U	12 U	12 U
Bromodichloromethane	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
1,2-Dichloropropane	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Cis-1,3-Dichloropropene	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Trichloroethene	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Dibromochloromethane	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
1,1,2-Trichloroethane	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Benzene	5	2 J	5 U	770	5 U	5 U	5 U	6 U	6 U
Trans-1,3-Dichloropropene	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Bromoform	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
4-Methyl-2-pentanone	10	11 U	10 U	1500 U	10 U	11 U	11 U	12 U	12 U
2-Hexanone	10	11 U	10 U	1500 U	10 U	11 U	11 U	12 U	12 U
Tetrachloroethene	5	6 U	5 U	750 U	5 U	5 U	5 U	5 J	2 J
1,1,2,2-Tetrachloroethane	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Toluene	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Chlorobenzene	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Ethylbenzene	5	3 J	5 U	2800	5 U	5 U	7	6 U	6 U
Styrene	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Xylenes (Total)	5	2 J	5 U	11000	5 U	5 U	6	6 U	6 U
Dilution Factor		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Percent Solids		89	97	83	96	94	92	82	81
Laboratory Method Blank		GH022641B12	GH022641B12	CN022960B13	GH022983B12	GH022983B12	GH022983B12	GH021584B10	GH021584B10

* = Medium level analysis.

Laboratory Report of Analysis

SAMPLE ID:	02SS104X0101XX	02SS105X0101XX	02SS105X0101XXRE	02SS105X0101XD	02SS105X0101XDRE	02SS106X0101XX
LAB NUMBER:	222884	222891	222891	222890	222890	222892
DATE SAMPLED:	10/17/88	10/17/88	10/17/88	10/17/88	10/17/88	10/17/88
MATRIX:	Soil	Soil	Soil	Soil	Soil	Soil
VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL					
Chloromethane	10	10 U	11 U	44 U	11 U	38 U	10 U
Bromomethane	10	10 U	11 U	44 U	11 U	38 U	10 U
Vinyl chloride	10	10 U	11 U	44 U	11 U	38 U	10 U
Chloroethane	10	10 U	11 U	44 U	11 U	38 U	10 U
Methylene chloride	5	17 B	28 B	57 BD	22 B	59 B	18 B
Acetone	10	37 B	41 B	210 BD	22 B	50 B	16 B
Carbon disulfide	5	5 U	5 U	22 U	5 U	19 U	5 U
1,1-Dichloroethene	5	5 U	5 U	22 U	5 U	19 U	5 U
1,1-Dichloroethane	5	5 U	5 U	22 U	5 U	19 U	5 U
1,2-Dichloroethene(Total)	5	5 U	5 U	22 U	5 U	19 U	5 U
Chloroform	5	5 U	5 U	22 U	2 B	14 J	2 JB
1,2-Dichloroethane	5	5 U	5 U	22 U	5 U	19 U	5 U
2-Butanone	10	10 U	11 U	30 JBD	11 U	38 U	10 U
1,1,1-Trichloroethane	5	5 U	5 U	22 U	5 U	19 U	5 U
Carbon tetrachloride	5	5 U	5 U	22 U	5 U	19 U	5 U
Vinyl acetate	10	10 U	11 U	44 U	11 U	38 U	10 U
Bromodichloromethane	5	5 U	5 U	22 U	5 U	19 U	5 U
1,2-Dichloropropane	5	5 U	5 U	22 U	5 U	19 U	5 U
Cis-1,3-Dichloropropene	5	5 U	5 U	22 U	5 U	19 U	5 U
Trichloroethene	5	5 U	5 U	22 U	5 U	19 U	5 U
Dibromochloromethane	5	5 U	5 U	22 U	5 U	19 U	5 U
1,1,2-Trichloroethane	5	5 U	5 U	22 U	5 U	19 U	5 U
Benzene	5	5 U	5 U	22 U	5 U	19 U	5 U
Trans-1,3-Dichloropropene	5	5 U	5 U	22 U	5 U	19 U	5 U
Bromoform	5	5 U	5 U	22 U	5 U	19 U	5 U
4-Methyl-2-pentanone	10	10 U	11 U	44 U	11 U	38 U	10 U
2-Hexanone	10	10 U	11 U	44 U	11 U	38 U	10 U
Tetrachloroethene	5	5 U	5 U	22 U	5 U	19 U	5 U
1,1,2,2-Tetrachloroethane	5	5 U	5 U	22 U	5 U	19 U	5 U
Toluene	5	5 U	5 U	22 U	5 U	19 U	5 U
Chlorobenzene	5	5 U	5 U	22 U	5 U	19 U	5 U
Ethylbenzene	5	5 U	7	54 D	25	14 J	5 U
Styrene	5	5 U	5 U	22 U	5 U	19 U	5 U
Xylenes (Total)	5	5 U	540 E	2700 DE	640 E	1500 E	5 U
Dilution Factor		1.0	1.0	1.0	1.0	1.0	1.0
Percent Solids		99	94	94	93	93	96
Laboratory Method Blank		GH022983B12	GH022984A12	GH025695C03	GH022984A12	GH024307C13	GH024306A12

* = Medium level analysis.

Laboratory Report of Analysis

SAMPLE ID:		02SB103X0401XX	02SB103X1601XX	02SB103X2401XX	02SB104X1601XX	02SB104X1601XD	02SB104X2101XX	02SB105X2601XX	02SB105X3101XX
LAB NUMBER:		222571	222574	222577	222888	222886	222889	221390	221394
DATE SAMPLED:		10/14/88	10/14/88	10/14/88	10/17/88	10/17/88	10/17/88	10/07/88	10/07/88
MATRIX:		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
SEMI-VOLATILE ORGANIC COMPOUNDS									
UNITS: ug/kg	CRDL								
Phenol	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
bis(2-Chloroethyl)ether	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
2-Chlorophenol	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
1,3-Dichlorobenzene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
1,4-Dichlorobenzene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Benzyl alcohol	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
1,2-Dichlorobenzene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
2-Methylphenol	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
bis(2-Chloroisopropyl)ether	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
4-Methylphenol	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
N-Nitroso-di-n-propylamine	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Hexachloroethane	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Nitrobenzene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Isophorone	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
2-Nitrophenol	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
2,4-Dimethylphenol	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Benzoic acid	1600	1800 U	1600 U	9600 U	1700 U	1700 U	1700 U	2000 U	2000 U
bis(2-Chloroethoxy)methane	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
2,4-Dichlorophenol	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
1,2,4-Trichlorobenzene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Naphthalene	330	100 J	390	9800	340 U	350 U	140 J	400 U	410 U
4-Chloroaniline	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Hexachlorobutadiene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
4-Chloro-3-methylphenol	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
2-Methylnaphthalene	330	120 J	1100	20000	340 U	350 U	550	400 U	410 U
Hexachlorocyclopentadiene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
2,4,6-Trichlorophenol	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
2,4,5-Trichlorophenol	1600	1800 U	1600 U	9600 U	1700 U	1700 U	1700 U	2000 U	2000 U
2-Chloronaphthalene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
2-Nitroaniline	1600	1800 U	1600 U	9600 U	1700 U	1700 U	1700 U	2000 U	2000 U
Dimethyl phthalate	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Acenaphthylene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
2,6-Dinitrotoluene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U

x = Denotes the coelution of benzo (b) fluoranthene and benzo (k) fluoranthene.

Laboratory Report of Analysis

SAMPLE ID:		02SB103X0401XX	02SB103X1601XX	02SB103X2401XX	02SB104X1601XX	02SB104X1601XD	02SB104X2101XX	02SB105X2601XX	02SB105X3101XX
LAB NUMBER:		222571	222574	222577	222888	222886	222889	221390	221394
DATE SAMPLED:		10/14/88	10/14/88	10/14/88	10/17/88	10/17/88	10/17/88	10/07/88	10/07/88
MATRIX:		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
SEMI-VOLATILE ORGANIC COMPOUNDS									
UNITS: ug/kg	CRDL								
3-Nitroaniline	1600	1800 U	1600 U	9600 U	1700 U	1700 U	1700 U	2000 U	2000 U
Acenaphthene	330	370 U	110 J	2000 U	340 U	350 U	190 J	400 U	410 U
2,4-Dinitrophenol	1600	1800 U	1600 U	9600 U	1700 U	1700 U	1700 U	2000 U	2000 U
4-Nitrophenol	1600	1800 U	1600 U	9600 U	1700 U	1700 U	1700 U	2000 U	2000 U
Dibenzofuran	330	370 U	90 J	1000 J	340 U	350 U	200 J	400 U	410 U
2,4-Dinitrotoluene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Diethyl phthalate	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
4-Chlorophenyl phenyl ether	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Fluorene	330	370 U	170 J	1600 J	340 U	350 U	370	400 U	410 U
4-Nitroaniline	1600	1800 U	1600 U	9600 U	1700 U	1700 U	1700 U	2000 U	2000 U
4,6-Dinitro-2-methylphenol	1600	1800 U	1600 U	9600 U	1700 U	1700 U	1700 U	2000 U	2000 U
N-Nitrosodiphenylamine(1)	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
4-Bromophenyl phenyl ether	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Hexachlorobenzene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Pentachlorophenol	1600	1800 U	1600 U	9600 U	1700 U	1700 U	1700 U	2000 U	2000 U
Phenanthrene	330	53 J	970	7400	340 U	350 U	2500	400 U	410 U
Anthracene	330	370 U	250 J	2100	340 U	350 U	620	400 U	410 U
Di-n-butyl phthalate	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Fluoranthene	330	370 U	690	4600	340 U	350 U	2000	400 U	410 U
Pyrene	330	370 U	490	5700	38 J	350 U	1800	400 U	410 U
Butyl-benzyl phthalate	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
3,3'-Dichlorobenzidine	660	740 U	680 U	4000 U	690 U	700 U	720 U	810 U	820 U
Benzo(a)anthracene	330	370 U	220 J	1200 J	340 U	350 U	570	400 U	410 U
Chrysene	330	370 U	200 J	1300 J	340 U	350 U	550	400 U	410 U
bis(2-Ethylhexyl)phthalate	330	550	68 J	650 J	57 JB	84 JB	69 JB	400 U	410 U
Di-n-octyl phthalate	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Benzo(b)fluoranthene	330	370 U	210 JX	1300 JX	340 U	350 U	580 X	400 U	410 U
Benzo(k)fluoranthene	330	370 U	210 JX	1300 JX	340 U	350 U	580 X	400 U	410 U
Benzo(a)pyrene	330	370 U	100 J	640 J	340 U	350 U	280 J	400 U	410 U
Indeno(1,2,3-cd)pyrene	330	370 U	340 U	2000 U	340 U	350 U	56 J	400 U	410 U
Dibenzo(a,h)anthracene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Benzo(g,h,i)perylene	330	370 U	340 U	2000 U	340 U	350 U	59 J	400 U	410 U
Dilution Factor		1.0	1.0	5.0	1.0	1.0	1.0	1.0	1.0
Percent Solids		89	97	83	96	94	92	82	81
Laboratory Method Blank		GJ022693B20	GJ022693B20	GJ022693B20	G2J22935C02	G2J22935C02	G2J22935C02	GH021537A04	GH021537A04
Petroleum Hydrocarbons(mg/kg)	50	50 U	140	1100	60 U	50 U	260	60 U	60 U
Percent Solids		92	97	83	85	94	90	82	81

x = Denotes the coelution of benzo (b) fluoranthene and benzo (k) fluoranthene.

Laboratory Report of Analysis

SAMPLE ID:	02SS104X0101XX	02SS105X0101XX	02SS105X0101XD	02SS105X0101XXDL	02SS106X0101XX
LAB NUMBER:	222884	222891	222890	222890DL	222892
DATE SAMPLED:	10/17/88	10/17/88	10/17/88	10/17/88	10/17/88
MATRIX:	Soil	Soil	Soil	Soil	Soil
SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL				
Phenol	330	330 U	700 U	710 U	1400 U	690 U
bis(2-Chloroethyl)ether	330	330 U	700 U	710 U	1400 U	690 U
2-Chlorophenol	330	330 U	700 U	710 U	1400 U	690 U
1,3-Dichlorobenzene	330	330 U	700 U	710 U	1400 U	690 U
1,4-Dichlorobenzene	330	330 U	700 U	710 U	1400 U	690 U
Benzyl alcohol	330	330 U	700 U	710 U	1400 U	690 U
1,2-Dichlorobenzene	330	330 U	700 U	710 U	1400 U	690 U
2-Methylphenol	330	330 U	700 U	710 U	1400 U	690 U
bis(2-Chloroisopropyl)ether	330	330 U	700 U	710 U	1400 U	690 U
4-Methylphenol	330	330 U	700 U	710 U	1400 U	690 U
N-Nitroso-di-n-propylamine	330	330 U	700 U	710 U	1400 U	690 U
Hexachloroethane	330	330 U	700 U	710 U	1400 U	690 U
Nitrobenzene	330	330 U	700 U	710 U	1400 U	690 U
Isophorone	330	330 U	700 U	710 U	1400 U	690 U
2-Nitrophenol	330	330 U	700 U	710 U	1400 U	690 U
2,4-Dimethylphenol	330	330 U	700 U	710 U	1400 U	690 U
Benzoic acid	1600	1600 U	3400 U	3400 U	6900 UJ	3300 U
bis(2-Chloroethoxy)methane	330	330 U	700 U	710 U	1400 U	690 U
2,4-Dichlorophenol	330	330 U	700 U	710 U	1400 U	690 U
1,2,4-Trichlorobenzene	330	330 U	700 U	710 U	1400 U	690 U
Naphthalene	330	330 U	2400	3900 D	4200 D	690 U
4-Chloroaniline	330	330 U	700 U	710 U	1400 U	690 U
Hexachlorobutadiene	330	330 U	700 U	710 U	1400 U	690 U
4-Chloro-3-methylphenol	330	330 U	700 U	710 U	1400 U	690 U
2-Methylnaphthalene	330	330 U	8900	14000 E	13000 D	690 U
Hexachlorocyclopentadiene	330	330 U	700 U	710 U	1400 U	690 U
2,4,6-Trichlorophenol	330	330 U	700 U	710 U	1400 U	690 U
2,4,5-Trichlorophenol	1600	1600 U	3400 U	3400 U	6900 U	3300 U
2-Chloronaphthalene	330	330 U	700 U	710 U	1400 U	690 U
2-Nitroaniline	1600	1600 U	3400 U	3400 U	6900 U	3300 U
Dimethyl phthalate	330	330 U	700 U	710 U	1400 U	690 U
Acenaphthylene	330	330 U	700 U	710 U	1400 U	690 U
2,6-Dinitrotoluene	330	330 U	700 U	710 U	1400 U	690 U

x = Denotes the coelution of benzo (b) fluoranthene and benzo (k) fluoranthene.

Laboratory Report of Analysis

SAMPLE ID:		02SS104X0101XX	02SS105X0101XX	02SS105X0101XD	02SS105X0101XXDL	02SS106X0101XX
LAB NUMBER:		222884	222891	222890	222890DL	222892
DATE SAMPLED:		10/17/88	10/17/88	10/17/88	10/17/88	10/17/88
MATRIX:		Soil	Soil	Soil	Soil	Soil
SEMI-VOLATILE ORGANIC COMPOUNDS						
UNITS: ug/kg	CRDL					
3-Nitroaniline	1600	1600 U	3400 U	3400 U	6900 U	3300 U
Acenaphthene	330	330 U	700 U	710 U	1400 U	690 U
2,4-Dinitrophenol	1600	1600 U	3400 U	3400 U	6900 U	3300 U
4-Nitrophenol	1600	1600 U	3400 U	3400 U	6900 U	3300 U
Dibenzofuran	330	330 U	700 U	710 U	1400 U	690 U
2,4-Dinitrotoluene	330	330 U	700 U	710 U	1400 U	690 U
Diethyl phthalate	330	330 U	700 U	710 U	1400 U	690 U
4-Chlorophenyl phenyl ether	330	330 U	700 U	710 U	1400 U	690 U
Fluorene	330	330 U	140 J	710 U	1400 U	690 U
4-Nitroaniline	1600	1600 U	3400 U	3400 U	6900 U	3300 U
4,6-Dinitro-2-methylphenol	1600	1600 U	3400 U	3400 U	6900 U	3300 U
N-Nitrosodiphenylamine(1)	330	330 U	700 U	710 U	1400 U	690 U
4-Bromophenyl phenyl ether	330	330 U	700 U	710 U	1400 U	690 U
Hexachlorobenzene	330	330 U	700 U	710 U	1400 U	690 U
Pentachlorophenol	1600	1600 U	3400 U	3400 U	6900 U	3300 U
Phenanthrene	330	330 U	700 U	79 J	1400 U	220 J
Anthracene	330	330 U	700 U	710 U	1400 U	690 U
Di-n-butyl phthalate	330	330 U	700 U	710 U	1400 U	690 U
Fluoranthene	330	330 U	700 U	710 U	1400 U	570 J
Pyrene	330	330 U	700 U	710 U	1400 U	690
Butyl benzyl phthalate	330	330 U	700 U	710 U	1400 U	690 U
3,3'-Dichlorobenzidine	660	670 U	1400 U	1400 U	2800 U	1400 U
Benzo(a)anthracene	330	330 U	700 U	710 U	1400 U	390 J
Chrysene	330	330 U	700 U	710 U	1400 U	540 J
bis(2-Ethylhexyl)phthalate	330	130 JB	460 JB	970 B	1000 BDJ	100 JB
Di-n-octyl phthalate	330	330 U	700 U	710 U	1400 U	690 U
Benzo(b)fluoranthene	330	330 U	700 U	710 U	1400 U	440 J
Benzo(k)fluoranthene	330	330 U	700 U	710 U	1400 U	340 J
Benzo(a)pyrene	330	330 U	700 U	710 U	1400 U	440 J
Indeno(1,2,3-cd)pyrene	330	330 U	700 U	710 U	1400 U	200 J
Dibenzo(a,h)anthracene	330	330 U	700 U	710 U	1400 U	690 U
Benzo(g,h,i)perylene	330	330 U	700 U	710 U	1400 U	230 J
Dilution Factor		1.0	2.0	2.0	4.0	2.0
Percent Solids		99	94	93	93	96
Laboratory Method Blank		G2J22935C02	G2J22935B07	G2J22935B07	G2J22935B07	G2J22935B07
Petroleum Hydrocarbons(mg/kg)	50	50 U	3400	3400	-	520
Percent Solids		92	92	95	-	96

x = Denotes the coelution of benzo (b) fluoranthene and benzo (k) fluoranthene.

Laboratory Report of Analysis

	SAMPLE ID:	02SB103X0401XX	02SB103X1601XX	02SB103X2401XX	02SB104X1601XX	02SB104X1601XD	02SB104X2101XX	02SB105X2601XX	02SB105X3101XX
	LAB NUMBER:	222572	222575	222578	222900	222899	222901	221396	221398
	DATE SAMPLED:	10/14/88	10/14/88	10/14/88	10/17/88	10/17/88	10/17/88	10/07/88	10/07/88
	MATRIX:	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
METALS COMPOUNDS UNITS: mg/kg	ANALYTICAL METHOD	CRDL							
Lead	P/F	1	11	0.91 []	4.5	3.3	8	3.2	8.8 *	2.1 *
Percent Solids			89	97	83	96	94	92	82	81
Laboratory Method Blank			15409A	15409A	15409A	15409A	15409A	15409A	15410B	15410B

Laboratory Report of Analysis

	SAMPLE ID:	02SS104X0101XX	02SS105X0101XD	02SS105X0101XX	02SS106X0101XX
	LAB NUMBER:	222898	222902	222903	222904
	DATE SAMPLED:	10/17/88	10/17/88	10/17/88	10/17/88
	MATRIX:	Soil	Soil	Soil	Soil
METALS COMPOUNDS UNITS: mg/kg	ANALYTICAL METHOD	CRDL				
Lead	P/F	1	35 S	25	34	18
Percent Solids			99	93	94	96
Laboratory Method Blank			15409A	15409A	15409A	15409A

Laboratory Report of Analysis

	SAMPLE ID:	03SB106X1101XX	03SB106X2601XX	03SB107X1601XX	03SB107X2601XX	03SB108X0401XX	03SB108X0801XX	03SB108X2001XX
	LAB NUMBER:	220666	220662	220813	220814	220658	220660	220661
	DATE SAMPLED:	10/04/88	10/04/88	10/04/88	10/04/88	10/03/88	10/03/88	10/03/88
	MATRIX:	Soil	Soil	Soil	Soil	Soil *	Soil *	Soil
VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL							
Chloromethane	10	11 U	11 U	11 U	12 U	3500 U	1400 U	11 U
Bromomethane	10	11 U	11 U	11 U	12 U	3500 U	1400 U	11 U
Vinyl chloride	10	11 U	11 U	11 U	12 U	3500 U	1400 U	11 U
Chloroethane	10	11 U	11 U	11 U	12 U	3500 U	1400 U	11 U
Methylene chloride	5	15 B	32 B	10 B	27 B	1800 U	680 U	13 B
Acetone	10	20 B	47 B	10 B J	14 B	3500 U	140 B J	21 B
Carbon disulfide	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
1,1-Dichloroethene	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
1,1-Dichloroethane	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
1,2-Dichloroethene(Total)	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
Chloroform	5	5 U	2 J	5 U	6 U	1800 U	680 U	5 U
1,2-Dichloroethane	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
2-Butanone	10	11 U	11 U	11 U	12 U	3500 U	1400 U	11 U
1,1,1-Trichloroethane	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
Carbon tetrachloride	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
Vinyl acetate	10	11 U	11 U	11 U	12 U	3500 U	1400 U	11 U
Bromodichloromethane	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
1,2-Dichloropropane	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
Cis-1,3-Dichloropropene	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
Trichloroethene	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
Dibromochloromethane	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
1,1,2-Trichloroethane	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
Benzene	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
Trans-1,3-Dichloropropene	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
Bromoform	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
4-Methyl-2-pentanone	10	11 U	11 U	11 U	12 U	3500 U	1400 U	11 U
2-Hexanone	10	11 U	11 U	11 U	12 U	3500 U	1400 U	11 U
Tetrachloroethene	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
1,1,2,2-Tetrachloroethane	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
Toluene	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
Chlorobenzene	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
Ethylbenzene	5	5 U	6 U	5 U	6 U	1700 JB	680 U	5 U
Styrene	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
Xylenes (Total)	5	5 U	6 U	5 U	6 U	17000 B	680 U	5 U
Dilution Factor		1.0	1.0	1.0	1.0	1.0	1.0	1.0
Percent Solids		93	87	94	84	89	92	92
Laboratory Method Blank		GH020990C12	GH020989A12	GH021583A10	GH021136C10	CN021721C13	CN021721C13	GH022110C10

* = Medium level analysis.

Laboratory Report of Analysis

SAMPLE ID:	03SB106X1101XX	03SB106X2601XX	03SB107X1601XX	03SB107X2601XX	03SB108X0401XX	03SB108X0801XX	03SB108X2001XX
LAB NUMBER:	220666	220662	220813	220814	220658	220660	220661
DATE SAMPLED:	10/03/88	10/03/88	10/04/88	10/04/88	10/03/88	10/03/88	10/03/88
MATRIX:	Soil	Soil	Soil	Soil	Soil	Soil	Soil
SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL						
Phenol	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
bis(2-Chloroethyl)ether	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2-Chlorophenol	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
1,3-Dichlorobenzene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
1,4-Dichlorobenzene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Benzyl alcohol	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
1,2-Dichlorobenzene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2-Methylphenol	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
bis(2-Chloroisopropyl)ether	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
4-Methylphenol	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
N-Nitroso-di-n-propylamine	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Hexachloroethane	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Nitrobenzene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Isophorone	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2-Nitrophenol	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2,4-Dimethylphenol	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Benzoic acid	1600	1700 U	1800 U	1700 U	1800 U	3600 U	1700 U	1700 U
bis(2-Chloroethoxy)methane	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2,4-Dichlorophenol	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
1,2,4-Trichlorobenzene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Naphthalene	330	350 U	380 U	340 U	380 U	3900	2400	490
4-Chloroaniline	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Hexachlorobutadiene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
4-Chloro-3-methylphenol	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2-Methylnaphthalene	330	350 U	380 U	340 U	380 U	8500	5300	500
Hexachlorocyclopentadiene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2,4,6-Trichlorophenol	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2,4,5-Trichlorophenol	1600	1700 U	1800 U	1700 U	1800 U	3600 U	1700 U	1700 U
2-Chloronaphthalene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2-Nitroaniline	1600	1700 U	1800 U	1700 U	1800 U	3600 U	1700 U	1700 U
Dimethyl phthalate	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Acenaphthylene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2,6-Dinitrotoluene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U

Laboratory Report of Analysis

SAMPLE ID:		03SB106X1101XX	03SB106X2601XX	03SB107X1601XX	03SB107X2601XX	03SB108X0401XX	03SB108X0801XX	03SB108X2001XX
LAB NUMBER:		220666	220662	220813	220814	220658	220660	220661
DATE SAMPLED:		10/03/88	10/03/88	10/04/88	10/04/88	10/03/88	10/03/88	10/03/88
MATRIX:		Soil	Soil	Soil	Soil	Soil	Soil	Soil
SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL							
3-Nitroaniline	1600	1700 U	1800 U	1700 U	1800 U	3600 U	1700 U	1700 U
Acenaphthene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2,4-Dinitrophenol	1600	1700 U	1800 U	1700 U	1800 U	3600 U	1700 U	1700 U
4-Nitrophenol	1600	1700 U	1800 U	1700 U	1800 U	3600 U	1700 U	1700 U
Dibenzofuran	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2,4-Dinitrotoluene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Diethyl phthalate	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
4-Chlorophenyl phenyl ether	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Fluorene	330	350 U	380 U	340 U	380 U	100 J	63 J	360 U
4-Nitroaniline	1600	1700 U	1800 U	1700 U	1800 U	3600 U	1700 U	1700 U
4,6-Dinitro-2-methylphenol	1600	1700 U	1800 U	1700 U	1800 U	3600 U	1700 U	1700 U
N-Nitrosodiphenylamine	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
4-Bromophenyl phenyl ether	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Hexachlorobenzene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Pentachlorophenol	1600	1700 U	1800 U	1700 U	1800 U	3600 U	1700 U	1700 U
Phenanthrene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Anthracene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Di-n-butyl phthalate	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Fluoranthene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Pyrene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Butyl benzyl phthalate	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
3,3'-Dichlorobenzidine	660	710 U	760 U	690 U	760 U	1500 U	720 U	720 U
Benzo(a)anthracene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Chrysene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
bis(2-Ethylhexyl)phthalate	330	130 J	140 J	340 U	380 U	150 J	150 J	230 J
Di-n-octyl phthalate	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Benzo(b)fluoranthene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Benzo(k)fluoranthene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Benzo(a)pyrene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Indeno(1,2,3-cd)pyrene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Dibenzo(a,h)anthracene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Benzo(g,h,i)perylene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Dilution Factor		1	1	1	1	2	1	1
Percent Solids		93	87	94	84	89	92	92
Laboratory Method Blank		GH020765A02	GH020765A02	GH02100A02	GH02100A02	GH020765A02	GH020765A02	GH020765A02
Petroleum Hydrocarbons (mg/kg)	50	50 U	60 U	50 U	60 U	1200	440	910
Percent Solids		97	87	94	84	89	92	92

Laboratory Report of Analysis

SAMPLE ID:			03SB106X1101XX	03SB106X2601XX	03SB107X1601XX	03SB107X2601XX	03SB108X0401XX	03SB108X0801XX	03SB108X2001XX
LAB NUMBER:			220676	220675	220817	220818	220671	220672	220673
DATE SAMPLED:			10/04/88	10/04/88	10/04/88	10/04/88	10/03/88	10/03/88	10/03/88
MATRIX:			Soil	Soil	Soil	Soil	Soil	Soil	Soil
METALS COMPOUNDS UNITS: mg/kg	ANALYTICAL METHOD	CRDL							
Lead	F	1	2.3 *	1.5 *	2.2 *	1.9 *	11 *	4.8 *	4.2 *
Percent Solids			93	87	94	84	89	92	92
Laboratory Method Blank			15410B	15410B	15410B	15410B	15410B	15410B	15410B

Laboratory Report of Analysis

SAMPLE ID: OSBP111X4101XX
LAB NUMBER: 222401
DATE SAMPLED: 10/12/88
MATRIX: Soil *

VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL	
Chloromethane	10	1500 U
Bromomethane	10	1500 U
Vinyl Chloride	10	1500 U
Chloroethane	10	1500 U
Methylene Chloride	5	160 JB
Acetone	10	920 JB
Carbon Disulfide	5	760 U
1,1-Dichloroethene	5	760 U
1,1-Dichloroethane	5	760 U
1,2-Dichloroethene (total)	5	760 U
Chloroform	5	760 U
1,2-Dichloroethane	5	760 U
2-Butanone	10	1500 U
1,1,1-Trichloroethane	5	760 U
Carbon Tetrachloride	5	760 U
Vinyl Acetate	10	1500 U
Bromodichloromethane	5	760 U
1,2-Dichloropropane	5	760 U
Trans-1,3-Dichloropropene	5	760 U
Trichloroethene	5	760 U
Dibromochloromethane	5	760 U
1,1,2-Trichloroethane	5	760 U
Benzene	5	680 J
Cis-1,3-Dichloropropene	5	760 U
Bromoform	5	760 U
4-Methyl-2-Pentanone	10	1500 U
2-Hexanone	10	1500 U
Tetrachloroethene	5	760 U
1,1,2,2-Tetrachloroethane	5	760 U
Toluene	5	760 U
Ethylbenzene	5	760 U
Chlorobenzene	5	17000
Styrene	5	760 U
Xylenes (Total)	5	74000 BE
Dilution Factor		1
Percent Solids		82

Laboratory Method Blank CN022755B03

* = Medium level analysis.

Laboratory Report of Analysis

SAMPLE ID:	OSBP111X4101XX
LAB NUMBER:	222401
DATE SAMPLED:	10/12/88
MATRIX:	Soil

SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL	
Phenol	330	2000 U
bis(2-Chloroethyl)ether	330	2000 U
2-Chlorophenol	330	2000 U
1,3-Dichlorobenzene	330	2000 U
1,4-Dichlorobenzene	330	2000 U
Benzyl alcohol	330	2000 U
1,2-Dichlorobenzene	330	2000 U
2-Methylphenol	330	2000 U
bis(2-Chloroisopropyl)ether	330	2000 U
4-Methylphenol	330	2000 U
N-Nitroso-di-n-propylamine	330	2000 U
Hexachloroethane	330	2000 U
Nitrobenzene	330	2000 U
Isophorone	330	2000 U
2-Nitrophenol	330	2000 U
2,4-Dimethylphenol	330	2000 U
Benzoic acid	1600	9800 U
bis(2-Chloroethoxy)methane	330	2000 U
2,4-Dichlorophenol	330	2000 U
1,2,4-Trichlorobenzene	330	2000 U
Naphthalene	330	11000
4-Chloroaniline	330	2000 U
Hexacholorobutadiene	330	2000 U
4-Chloro-3-Methylphenol	330	2000 U
2-Methylnaphthalene	330	31000
Hexachlorocyclopentadiene	330	2000 U
2,4,6-Trichlorophenol	330	2000 U
2,4,5-Trichlorophenol	1600	9800 U
2-Chloronaphthalene	330	2000 U
2-Nitroaniline	1600	9800 U
Dimethylphthalate	330	2000 U
Acenaphthylene	330	2000 U
2,6-Dinitrotoluene	330	2000 U

Laboratory Report of Analysis

SAMPLE ID:	OSBP111X4101XX
LAB NUMBER:	222401
DATE SAMPLED:	10/12/88
MATRIX:	Soil

SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL	
3-Nitroaniline	1600	9800 U
Acenaphthene	330	370 J
2,4-Dinitrophenol	1600	9800 U
4-Nitrophenol	1600	9800 U
Dibenzofuran	330	490 J
2,4-Dinitrotoluene	330	2000 U
Diethylphthalate	330	2000 U
4-Chlorophenyl-phenylether	330	2000 U
Fluorene	330	440 J
4-Nitroaniline	1600	9800 U
4,6-Dinitro-2-methylphenol	1600	9800 U
N-Nitrosodiphenylamine	330	2000 U
4-Bromophenyl-phenylether	330	2000 U
Hexachlorobenzene	330	2000 U
Pentachlorophenol	1600	9800 U
Phenanthrene	330	2000 U
Anthracene	330	2000 U
Di-n-butylphthalate	330	2000 U
Fluoranthene	330	2000 U
Pyrene	330	2000 U
Butylbenzylphthalate	330	2000 U
3,3'-Dichlorobenzidine	660	4000 U
Benzo(a)Anthracene	330	2000 U
Chrysene	330	2000 U
bis(2-Ethylhexyl)phthalate	330	2000 U
Di-n-octylphthalate	330	2000 U
Benzo(b)Fluoranthene	330	2000 U
Benzo(k)Fluoranthene	330	2000 U
Benzo(a)Pyrene	330	2000 U
Indeno(1,2,3-cd)pyrene	330	2000 U
Dibenz(a,h)anthracene	330	2000 U
Benzo(g,h,i,)perylene	330	2000 U

Dilution Factor		5
Percent Solid		82
Laboratory Method Blank		GJ022589B16
Petroleum Hydrocarbons (mg/kg)	50	420
PHC Percent Solids		86

Laboratory Report of Analysis

SAMPLE ID:	OSBP111X4101XX
LAB NUMBER:	222403
DATE SAMPLED:	10/12/88
MATRIX:	Soil

METALS COMPOUNDS UNITS: mg/kg	ANALYTICAL METHOD	CRDL	
Lead	F	1	1 []
Percent Solids			82
Laboratory Method Blank			15409A

APPENDIX F-2

VALIDATED DATA

Flagged Data Table
(Full Validation)

SAMPLE ID:		01SB101X1401XX	01SB101X2001XX	01SB102X0801XX	01SB102X2101XX	01SB102X2601XX	01SS101X0101XX	01SS102X0101XX	01SS102X0101XD
LAB NUMBER:		220811	220812	221233	221234	221235	222878	222882	222880
DATE SAMPLED:		10/05/88	10/05/88	10/06/88	10/06/88	10/06/88	10/17/88	10/17/88	10/17/88
MATRIX:		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
VOLATILE ORGANIC COMPOUNDS									
UNITS: ug/kg	CRDL								
Chloromethane	10	12 U	11 U	11 U	11 U	12 U	11 U	11 U	11 U
Bromomethane	10	12 U	11 U	11 U	11 U	12 U	11 U	11 U	11 U
Vinyl chloride	10	12 U	11 U	11 U	11 U	12 U	11 U	11 U	11 U
Chloroethane	10	12 U	11 U	11 U	11 U	12 U	11 U	11 U	11 U
Methylene chloride	5	90 UJB	90 UJB	190 UJB	210 UJB	210 UJB	50 UJB	55 UJB	55 UJB
Acetone	10	160 UJB	150 UJB	200 UJB	220 UJB	220 UJB	120 UJB	120 UJB	120 UJB
Carbon disulfide	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
1,1-Dichloroethene	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
1,1-Dichloroethane	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
1,2-Dichloroethene(Total)	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Chloroform	5	6 U	6 U	2 JJ	2 JJ	2 JJ	5 U	5 U	5 U
1,2-Dichloroethane	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
2-Butanone	10	12 UR	11 UR	11 UR	11 UR	12 UR	11 UR	11 UR	11 UR
1,1,1-Trichloroethane	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Carbon tetrachloride	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Vinyl acetate	10	12 U	11 U	11 U	11 U	12 U	11 U	11 U	11 U
Bromodichloromethane	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
1,2-Dichloropropane	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Cis-1,3-Dichloropropene	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Trichloroethene	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Dibromochloromethane	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
1,1,2-Trichloroethane	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Benzene	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Trans-1,3-Dichloropropene	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Bromoform	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
4-Methyl-2-pentanone	10	12 U	11 U	11 U	11 U	12 U	11 U	11 U	11 U
2-Hexanone	10	12 U	11 U	11 U	11 U	12 U	11 U	11 U	11 U
Tetrachloroethene	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Toluene	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Chlorobenzene	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Ethylbenzene	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Styrene	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Xylenes (Total)	5	6 U	6 U	5 U	6 U	6 U	5 U	5 U	5 U
Dilution Factor		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Percent Solids		83	87	94	87	85	95	92	92
Laboratory Method Blank		GH021136C10	GH021136C10	GH021584B10	GH021584B10	GH021584B10	GH022983B12	GH022983B12	GH022983B12

Flagged Data Table
(Full Validation)

SAMPLE ID: 01SS103X0101XX
LAB NUMBER: 222883
DATE SAMPLED: 10/17/88
MATRIX: Soil

VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL	
Chloromethane	10	11 U
Bromomethane	10	11 U
Vinyl chloride	10	11 U
Chloroethane	10	11 U
Methylene chloride	5	55 UJB
Acetone	10	120 UJB
Carbon disulfide	5	6 U
1,1-Dichloroethene	5	6 U
1,1-Dichloroethane	5	6 U
1,2-Dichloroethene(Total)	5	6 U
Chloroform	5	6 U
1,2-Dichloroethane	5	6 U
2-Butanone	10	11 UR
1,1,1-Trichloroethane	5	6 U
Carbon tetrachloride	5	6 U
Vinyl acetate	10	11 U
Bromodichloromethane	5	6 U
1,2-Dichloropropane	5	6 U
Cis-1,3-Dichloropropene	5	6 U
Trichloroethene	5	6 U
Dibromochloromethane	5	6 U
1,1,2-Trichloroethane	5	6 U
Benzene	5	6 U
Trans-1,3-Dichloropropene	5	6 U
Bromoform	5	6 U
4-Methyl-2-pentanone	10	11 U
2-Hexanone	10	11 U
Tetrachloroethene	5	6 U
1,1,2,2-Tetrachloroethane	5	6 U
Toluene	5	6 U
Chlorobenzene	5	6 U
Ethylbenzene	5	6 U
Styrene	5	6 U
Xylenes (Total)	5	6 U
Dilution Factor		1.0
Percent Solids		90

Laboratory Method Blank GH022983B12

Flagged Data Table
(Full Validation)

SAMPLE ID:		01SB101X1401XX	01SB101X2001XX	01SB102X0801XX	01SB102X2101XX	01SB102X2601XX	01SS101X0101XX	01SS102X0101XX	01SS102X0101XD
LAB NUMBER:		220811	220812	221233	221234	221235	222878	222882	222880
DATE SAMPLED:		10/04/88	10/04/88	10/05/88	10/05/88	10/05/88	10/16/88	10/16/88	10/16/88
MATRIX:		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL								
Phenol	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
bis(2-Chloroethyl)ether	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
2-Chlorophenol	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
1,3-Dichlorobenzene	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
1,4-Dichlorobenzene	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Benzyl alcohol	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
1,2-Dichlorobenzene	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
2-Methylphenol	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
bis(2-Chloroisopropyl)ether	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
4-Methylphenol	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
N-Nitroso-di-n-propylamine	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Hexachloroethane	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Nitrobenzene	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Isophorone	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
2-Nitrophenol	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
2,4-Dimethylphenol	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Benzoic acid	1600	1900 U	1800 U	1700 U	1800 U	1900 U	1700 U	1700 U	3500 UJ
bis(2-Chloroethoxy)methane	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
2,4-Dichlorophenol	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
1,2,4-Trichlorobenzene	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Naphthalene	330	400 U	370 U	350 U	380 U	390 U	350 U	39 JJ	720 U
4-Chloroaniline	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Hexachlorobutadiene	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
4-Chloro-3-methylphenol	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
2-Methylnaphthalene	330	400 U	370 U	350 U	380 U	390 U	48 JJ	63 JJ	720 U
Hexachlorocyclopentadiene	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
2,4,6-Trichlorophenol	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
2,4,5-Trichlorophenol	1600	1900 U	1800 U	1700 U	1800 U	1900 U	1700 U	1700 U	3500 U
2-Chloronaphthalene	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
2-Nitroaniline	1600	1900 U	1800 U	1700 U	1800 U	1900 U	1700 U	1700 U	3500 U
Dimethyl phthalate	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Acenaphthylene	330	400 U	370 U	350 U	380 U	390 U	350 U	41 JJ	720 U
2,6-Dinitrotoluene	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U

X = Denotes the coelution of benzo(b)fluoranthene and benzo(k)fluoranthene.

Flagged Data Table
(Full Validation)

SAMPLE ID:		01SB101X1401XX	01SB101X2001XX	01SB102X0801XX	01SB102X2101XX	01SB102X2601XX	01SS101X0101XX	01SS102X0101XX	01SS102X0101XD
LAB NUMBER:		220811	220812	221233	221234	221235	222878	222882	222880
DATE SAMPLED:		10/04/88	10/04/88	10/05/88	10/05/88	10/05/88	10/16/88	10/16/88	10/16/88
MATRIX:		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL								
3-Nitroaniline	1600	1900 U	1800 U	1700 U	1800 U	1900 U	1700 U	1700 U	3500 U
Acenaphthene	330	400 U	370 U	350 U	380 U	390 U	350 U	54 JJ	92 JJ
2,4-Dinitrophenol	1600	1900 U	1800 U	1700 U	1800 U	1900 U	1700 U	1700 U	3500 U
4-Nitrophenol	1600	1900 U	1800 U	1700 UJ	1800 UJ	1900 UJ	1700 U	1700 U	3500 UJ
Dibenzofuran	330	400 U	370 U	350 U	380 U	390 U	350 U	39 JJ	720 U
2,4-Dinitrotoluene	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Diethyl phthalate	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
4-Chlorophenyl phenyl ether	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Fluorene	330	400 U	370 U	350 U	380 U	390 U	350 U	59 JJ	720 U
4-Nitroaniline	1600	1900 U	1800 U	1700 U	1800 U	1900 U	1700 U	1700 U	3500 U
4,6-Dinitro-2-methylphenol	1600	1900 U	1800 U	1700 U	1800 U	1900 U	1700 U	1700 U	3500 U
N-Nitrosodiphenylamine(1)	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
4-Bromophenyl phenyl ether	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Hexachlorobenzene	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Pentachlorophenol	1600	1900 U	1800 U	1700 U	1800 U	1900 U	1700 U	1700 U	3500 U
Phenanthrene	330	400 U	370 U	350 U	380 U	390 U	460	1200	830
Anthracene	330	400 U	370 U	350 U	380 U	390 U	83 JJ	240 JJ	150 JJ
Di-n-butyl phthalate	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Fluoranthene	330	400 U	370 U	350 U	380 U	390 U	940	2500	1400
Pyrene	330	400 U	370 U	350 U	380 U	390 U	910	2100	1300
Butyl benzyl phthalate	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
3,3'-Dichlorobenzidine	660	800 U	740 U	700 U	760 U	780 U	690 U	720 U	1400 U
Benzo(a)anthracene	330	400 U	370 U	350 U	380 U	390 U	420	1100	700 JJ
Chrysene	330	400 U	370 U	350 U	380 U	390 U	460	1300	870
bis(2-Ethylhexyl)phthalate	330	400 U	370 U	350 U	46 JJ	390 U	520 UJB	1500	1200 UJB
Di-n-octyl phthalate	330	400 U	370 U	350 U	380 U	390 U	350 U	360 U	720 U
Benzo(b)fluoranthene	330	400 U	370 U	350 U	380 U	390 U	960 X	2600 X	860
Benzo(k)fluoranthene	330	400 UJ	370 UJ	350 UJ	380 UJ	390 UJ	960 XJ	2600 XJ	750
Benzo(a)pyrene	330	400 U	370 U	350 U	380 U	390 U	430	1100	680 JJ
Indeno(1,2,3-cd)pyrene	330	400 U	370 U	350 U	380 U	390 U	270 JJ	550	390 JJ
Dibenzo(a,h)anthracene	330	400 U	370 U	350 U	380 U	390 U	84 JJ	220 JJ	110 JJ
Benzo(g,h,i)perylene	330	400 U	370 U	350 U	380 U	390 U	300 JJ	620	360 JJ
Dilution Factor		1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0
Percent Solids		83	87	94	87	85	95	92	92
Laboratory Method Blank		GH021040A02	GH021040A02	GH021332A02	GH021332A02	GH021332A02	G2J22935C02	G2J22935C02	G2J22935B07
Petroleum Hydrocarbons (mg/kg)	50	60 U	60 U	50 U	60 U	60 U	140	180	390
Percent Solids		83	87	96	88	84	95	91	92

X = Denotes the coelution of benzo(b)fluoranthene and benzo(k)fluoranthene.

Flagged Data Table
(Full Validation)

SAMPLE ID:	01SS103X0101XX
LAB NUMBER:	222883
DATE SAMPLED:	10/16/88
MATRIX:	Soil

SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL	
Phenol	330	370 U
bis(2-Chloroethyl)ether	330	370 U
2-Chlorophenol	330	370 U
1,3-Dichlorobenzene	330	370 U
1,4-Dichlorobenzene	330	370 U
Benzyl alcohol	330	370 U
1,2-Dichlorobenzene	330	370 U
2-Methylphenol	330	370 U
bis(2-Chloroisopropyl)ether	330	370 U
4-Methylphenol	330	370 U
N-Nitroso-di-n-propylamine	330	370 U
Hexachloroethane	330	370 U
Nitrobenzene	330	370 U
Isophorone	330	370 U
2-Nitrophenol	330	370 U
2,4-Dimethylphenol	330	370 U
Benzoic acid	1600	1800 U
bis(2-Chloroethoxy)methane	330	370 U
2,4-Dichlorophenol	330	370 U
1,2,4-Trichlorobenzene	330	370 U
Naphthalene	330	370 U
4-Chloroaniline	330	370 U
Hexachlorobutadiene	330	370 U
4-Chloro-3-methylphenol	330	370 U
2-Methylnaphthalene	330	370 U
Hexachlorocyclopentadiene	330	370 U
2,4,6-Trichlorophenol	330	370 U
2,4,5-Trichlorophenol	1600	1800 U
2-Chloronaphthalene	330	370 U
2-Nitroaniline	1600	1800 U
Dimethyl phthalate	330	370 U
Acenaphthylene	330	370 U
2,6-Dinitrotoluene	330	370 U

X = Denotes the coelution of benzo(b)fluoranthene and benzo(k)fluoranthene.

Flagged Data Table
(Full Validation)

SAMPLE ID:	01SS103X0101XX
LAB NUMBER:	222883
DATE SAMPLED:	10/16/88
MATRIX:	Soil

SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL		
3-Nitroaniline	1600	1800	U
Acenaphthene	330	370	U
2,4-Dinitrophenol	1600	1800	U
4-Nitrophenol	1600	1800	U
Dibenzofuran	330	370	U
2,4-Dinitrotoluene	330	370	U
Diethyl phthalate	330	370	U
4-Chlorophenyl phenyl ether	330	370	U
Fluorene	330	370	U
4-Nitroaniline	1600	1800	U
4,6-Dinitro-2-methylphenol	1600	1800	U
N-Nitrosodiphenylamine(1)	330	370	U
4-Bromophenyl phenyl ether	330	370	U
Hexachlorobenzene	330	370	U
Pentachlorophenol	1600	1800	U
Phenanthrene	330	370	U
Anthracene	330	370	U
Di-n-butyl phthalate	330	370	U
Fluoranthene	330	110	JJ
Pyrene	330	140	JJ
Butyl benzyl phthalate	330	370	U
3,3'-Dichlorobenzidine	660	730	U
Benzo(a)anthracene	330	48	JJ
Chrysene	330	110	JJ
bis(2-Ethylhexyl)phthalate	330	1000	JB
Di-n-octyl phthalate	330	370	U
Benzo(b)fluoranthene	330	250	JJX
Benzo(k)fluoranthene	330	250	JJX
Benzo(a)pyrene	330	93	JJ
Indeno(1,2,3-cd)pyrene	330	70	JJ
Dibenzo(a,h)anthracene	330	370	U
Benzo(g,h,i)perylene	330	89	JJ
Dilution Factor		1.0	
Percent Solids		90	
Laboratory Method Blank		G2J22935C02	
Petroleum Hydrocarbons (mg/kg)	50	300	
Percent Solids		92	

X = Denotes the coelution of benzo(b)fluoranthene and benzo(k)fluoranthene.

Flagged Data Table
(Full Validation)

	SAMPLE ID:	01SB101X1401XX	01SB101X2001XX	01SB102X0801XX	01SB102X2101XX	01SB102X2601XX	01SS101X0101XX	01SS102X0101XD	01SS102X0101XX
	LAB NUMBER:	220815	220816	221238	221239	221240	222893	222894	222895
	DATE SAMPLED:	10/05/88	10/05/88	10/06/88	10/06/88	10/06/88	10/17/88	10/17/88	10/17/88
	MATRIX:	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
METALS COMPOUNDS UNITS: mg/kg	ANALYTICAL METHOD	CRDL							
Lead	P/F	1	5.9	1.9	2	2.7	1.9	57	96	88
Dilution Factor										
Percent Solids			83	87	94	87	85	95	92	92
Laboratory Method Blank			15410B	15410B	15410B	15410B	15410B	15409A	15409A	15409A

Flagged Data Table
(Full Validation)

SAMPLE ID:	01SS103X0101XX
LAB NUMBER:	222896
DATE SAMPLED:	10/17/88
MATRIX:	Soil

METALS COMPOUNDS UNITS: mg/kg	ANALYTICAL METHOD	CRDL	
Lead	P/F	1	13
Dilution Factor			
Percent Solids			90
Laboratory Method Blank			15409A

Flagged Data Table
(Full Validation)

SAMPLE ID:		02SB103X0401XX	02SB103X1601XX	02SB103X2401XX	02SB104X1601XX	02SB104X1601XD	02SB104X2101XX	02SB105X2601XX	02SB105X3101XX
LAB NUMBER:		222571	222574	222577	222888	222886	222889	221390	221394
DATE SAMPLED:		10/14/88	10/14/88	10/14/88	10/17/88	10/17/88	10/17/88	10/07/88	10/07/88
MATRIX:		Soil	Soil	Soil *	Soil	Soil	Soil	Soil	Soil
VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL								
Chloromethane	10	11 U	10 U	1500 U	10 U	11 U	11 U	12 U	12 U
Bromomethane	10	11 U	10 U	1500 U	10 U	11 U	11 U	12 U	12 U
Vinyl chloride	10	11 U	10 U	1500 U	10 U	11 U	11 U	12 U	12 U
Chloroethane	10	11 U	10 U	1500 U	10 U	11 U	11 U	12 U	12 U
Methylene chloride	5	220 UJB	210 UJB	320 UJB	50 UJB	55 UJB	55 UJB	220 UJB	220 UJB
Acetone	10	340 UJB	310 UJB	1500 U	120 UJB	120 UJB	120 UJB	230 UJB	240 UJB
Carbon disulfide	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
1,1-Dichloroethene	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
1,1-Dichloroethane	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
1,2-Dichloroethene(Total)	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Chloroform	5	11 UJB	10 UJB	750 U	2 JJ	5 U	5 U	1 JJ	1 JJ
1,2-Dichloroethane	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
2-Butanone	10	11 UR	10 UR	1500 UR	10 UR	11 UR	11 UR	12 UR	12 UR
1,1,1-Trichloroethane	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Carbon tetrachloride	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Vinyl acetate	10	11 U	10 U	1500 U	10 U	11 U	11 U	12 U	12 U
Bromodichloromethane	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
1,2-Dichloropropene	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Cis-1,3-Dichloropropene	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Trichloroethene	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Dibromochloromethane	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
1,1,2-Trichloroethane	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Benzene	5	2 JJ	5 U	770	5 U	5 U	5 U	6 U	6 U
Trans-1,3-Dichloropropene	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Bromoform	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
4-Methyl-2-pentanone	10	11 U	10 U	1500 U	10 U	11 U	11 U	12 U	12 U
2-Hexanone	10	11 U	10 U	1500 U	10 U	11 U	11 U	12 U	12 U
Tetrachloroethene	5	6 U	5 U	750 U	5 U	5 U	5 U	5 JJ	2 JJ
1,1,2,2-Tetrachloroethane	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Toluene	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Chlorobenzene	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Ethylbenzene	5	3 JJ	5 U	2800	5 U	5 U	7	6 U	6 U
Styrene	5	6 U	5 U	750 U	5 U	5 U	5 U	6 U	6 U
Xylenes (Total)	5	2 JJ	5 U	11000	5 U	5 U	6	6 U	6 U
Dilution Factor		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Percent Solids		89	97	83	96	94	92	82	81
Laboratory Method Blank		GH022641B12	GH022641B12	CN022960B13	GH022983B12	GH022983B12	GH022983B12	GH021584B10	GH021584B10

* = Medium level analysis.

Flagged Data Table
(Full Validation)

	SAMPLE ID:	02SS104X0101XX	02SS105X0101XX	02SS105X0101XD	02SS106X0101XX
	LAB NUMBER:	222884	222891	222890	222892
	DATE SAMPLED:	10/17/88	10/17/88	10/17/88	10/17/88
	MATRIX:	Soil	Soil	Soil	Soil
VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL				
Chloromethane	10	10 U	11 U	11 U	10 U
Bromomethane	10	10 U	11 U	11 U	10 U
Vinyl chloride	10	10 U	11 U	11 U	10 U
Chloroethane	10	10 U	11 U	11 U	10 U
Methylene chloride	5	50 UJB	190 UJB	200 UJB	200 UJB
Acetone	10	110 UJB	260 UJB	270 UJB	230 UJB
Carbon disulfide	5	5 U	5 U	5 U	5 U
1,1-Dichloroethene	5	5 U	5 U	5 U	5 U
1,1-Dichloroethane	5	5 U	5 U	5 U	5 U
1,2-Dichloroethene(Total)	5	5 U	5 U	5 U	5 U
Chloroform	5	5 U	5 UJB	5 UJB	15 UJB
1,2-Dichloroethane	5	5 U	5 U	5 U	5 U
2-Butanone	10	10 UR	11 UR	11 UR	10 UR
1,1,1-Trichloroethane	5	5 U	5 U	5 U	5 U
Carbon tetrachloride	5	5 U	5 U	5 U	5 U
Vinyl acetate	10	10 U	11 U	11 U	10 U
Bromodichloromethane	5	5 U	5 U	5 U	5 U
1,2-Dichloropropane	5	5 U	5 U	5 U	5 U
Cis-1,3-Dichloropropene	5	5 U	5 U	5 U	5 U
Trichloroethene	5	5 U	5 U	5 U	5 U
Dibromochloromethane	5	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	5	5 U	5 U	5 U	5 U
Benzene	5	5 U	5 U	5 U	5 U
Trans-1,3-Dichloropropene	5	5 U	5 U	5 U	5 U
Bromoform	5	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	10	10 U	11 U	11 U	10 U
2-Hexanone	10	10 U	11 U	11 U	10 U
Tetrachloroethene	5	5 U	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5	5 U	5 U	5 U	5 U
Toluene	5	5 U	5 U	5 U	5 U
Chlorobenzene	5	5 U	5 U	5 U	5 U
Ethylbenzene	5	5 U	7	25	5 U
Styrene	5	5 U	5 U	5 U	5 U
Xylenes (Total)	5	5 U	2700 JD	1500 JD	5 U
Dilution Factor		1.0	1.0	1.0	1.0
Percent Solids		99	94	93	96
Laboratory Method Blank		GH022983B12	GH022984A12	GH022984A12	GH024306A12

* = Medium level analysis.

Flagged Data Table
(Full Validation)

SAMPLE ID:	02SB103X0401XX	02SB103X1601XX	02SB103X2401XX	02SB104X1601XX	02SB104X1601XD	02SB104X2101XX	02SB105X2601XX	02SB105X3101XX
LAB NUMBER:	222571	222574	222577	222888	222886	222889	221390	221394
DATE SAMPLED:	10/14/88	10/14/88	10/14/88	10/17/88	10/17/88	10/17/88	10/07/88	10/07/88
MATRIX:	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL							
Phenol	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
bis(2-Chloroethyl)ether	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
2-Chlorophenol	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
1,3-Dichlorobenzene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
1,4-Dichlorobenzene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Benzyl alcohol	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
1,2-Dichlorobenzene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
2-Methylphenol	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
bis(2-Chloroisopropyl)ether	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 UJ	410 UJ
4-Methylphenol	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
N-Nitroso-di-n-propylamine	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Hexachloroethane	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Nitrobenzene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Isophorone	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
2-Nitrophenol	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
2,4-Dimethylphenol	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Benzoic acid	1600	1800 UJ	1600 UJ	9600 UJ	1700 U	1700 U	1700 U	2000 U	2000 U
bis(2-Chloroethoxy)methane	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
2,4-Dichlorophenol	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
1,2,4-Trichlorobenzene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Naphthalene	330	100 JJ	390	9800	340 U	350 U	140 JJ	400 U	410 U
4-Chloroaniline	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Hexachlorobutadiene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
4-Chloro-3-methylphenol	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
2-Methylnaphthalene	330	120 JJ	1100	20000	340 U	350 U	550	400 U	410 U
Hexachlorocyclopentadiene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
2,4,6-Trichlorophenol	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
2,4,5-Trichlorophenol	1600	1800 U	1600 U	9600 U	1700 U	1700 U	1700 U	2000 U	2000 U
2-Chloronaphthalene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
2-Nitroaniline	1600	1800 U	1600 U	9600 U	1700 U	1700 U	1700 U	2000 U	2000 U
Dimethyl phthalate	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Acenaphthylene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
2,6-Dinitrotoluene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U

x = Denotes the coelution of benzo (b) fluoranthene and benzo (k) fluorarthene.

Flagged Data Table
(Full Validation)

SAMPLE ID:		02SB103X0401XX	02SB103X1601XX	02SB103X2401XX	02SB104X1601XX	02SB104X1601XD	02SB104X2101XX	02SB105X2601XX	02SB105X3101XX
LAB NUMBER:		222571	222574	222577	222888	222886	222889	221390	221394
DATE SAMPLED:		10/14/88	10/14/88	10/14/88	10/17/88	10/17/88	10/17/88	10/07/88	10/07/88
MATRIX:		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
SEMI-VOLATILE ORGANIC COMPOUNDS									
UNITS: ug/kg	CRDL								
3-Nitroaniline	1600	1800 U	1600 U	9600 U	1700 U	1700 U	1700 U	2000 U	2000 U
Acenaphthene	330	370 U	110 JJ	2000 U	340 U	350 U	190 JJ	400 U	410 U
2,4-Dinitrophenol	1600	1800 U	1600 U	9600 UJ	1700 U	1700 U	1700 U	2000 U	2000 U
4-Nitrophenol	1600	1800 U	1600 U	9600 U	1700 U	1700 U	1700 U	2000 U	2000 U
Dibenzofuran	330	370 U	90 JJ	1000 JJ	340 U	350 U	200 JJ	400 U	410 U
2,4-Dinitrotoluene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Diethyl phthalate	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
4-Chlorophenyl phenyl ether	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Fluorene	330	370 U	170 JJ	1600 JJ	340 U	350 U	370	400 U	410 U
4-Nitroaniline	1600	1800 U	1600 U	9600 U	1700 U	1700 U	1700 U	2000 UJ	2000 UJ
4,6-Dinitro-2-methylphenol	1600	1800 U	1600 U	9600 U	1700 U	1700 U	1700 U	2000 U	2000 U
N-Nitrosodiphenylamine(1)	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
4-Bromophenyl phenyl ether	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Hexachlorobenzene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Pentachlorophenol	1600	1800 U	1600 U	9600 U	1700 U	1700 U	1700 U	2000 U	2000 U
Phenanthrene	330	53 JJ	970	7400	340 U	350 U	2500	400 U	410 U
Anthracene	330	370 U	250 JJ	2100	340 U	350 U	620	400 U	410 U
Di-n-butyl phthalate	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Fluoranthene	330	370 U	690	4600	340 U	350 U	2000	400 U	410 U
Pyrene	330	370 U	490	5700	38 JJ	350 U	1800	400 U	410 U
Butyl benzyl phthalate	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
3,3'-Dichlorobenzidine	660	740 U	680 U	4000 U	690 U	700 U	720 U	810 U	820 U
Benzo(a)anthracene	330	370 U	220 JJ	1200 JJ	340 U	350 U	570	400 U	410 U
Chrysene	330	370 U	200 JJ	1300 JJ	340 U	350 U	550	400 U	410 U
bis(2-Ethylhexyl)phthalate	330	550	68 JJ	650 JJ	510 UJB	520 UJB	530 UJB	400 U	410 U
Di-n-octyl phthalate	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Benzo(b)fluoranthene	330	370 U	210 JXJ	1300 JXJ	340 U	350 U	580 X	400 U	410 U
Benzo(k)fluoranthene	330	370 U	210 JXJ	1300 JXJ	340 UJ	350 UJ	580 XJ	400 U	410 U
Benzo(a)pyrene	330	370 U	100 JJ	640 JJ	340 U	350 U	280 JJ	400 U	410 U
Indeno(1,2,3-cd)pyrene	330	370 U	340 U	2000 U	340 U	350 U	56 JJ	400 U	410 U
Dibenzo(a,h)anthracene	330	370 U	340 U	2000 U	340 U	350 U	360 U	400 U	410 U
Benzo(g,h,i)perylene	330	370 U	340 U	2000 U	340 U	350 U	59 JJ	400 U	410 U
Dilution Factor		1.0	1.0	5.0	1.0	1.0	1.0	1.0	1.0
Percent Solids		89	97	83	96	94	92	82	81
Laboratory Method Blank		GJ022693B20	GJ022693B20	GJ022693B20	G2J22935C02	G2J22935C02	G2J22935C02	GH021537A04	GH021537A04
Petroleum Hydrocarbons(mg/kg)	50	50 U	140	1100	60 U	50 U	260	60 U	60 U
Percent Solids		92	97	83	85	94	90	82	81

x = Denotes the coelution of benzo (b) fluoranthene and benzo (k) fluoranthene.

Flagged Data Table
(Full Validation)

SAMPLE ID:		02SS104X0101XX	02SS105X0101XX	02SS105X0101XD	02SS106X0101XX
LAB NUMBER:		222884	222891	222890	222892
DATE SAMPLED:		10/17/88	10/17/88	10/17/88	10/17/88
MATRIX:		Soil	Soil	Soil	Soil
SEMI-VOLATILE ORGANIC COMPOUNDS					
UNITS: ug/kg	CRDL				
Phenol	330	330 U	700 U	710 U	690 U
bis(2-Chloroethyl)ether	330	330 U	700 U	710 U	690 U
2-Chlorophenol	330	330 U	700 U	710 U	690 U
1,3-Dichlorobenzene	330	330 U	700 U	710 U	690 U
1,4-Dichlorobenzene	330	330 U	700 U	710 U	690 U
Benzyl alcohol	330	330 U	700 U	710 U	690 U
1,2-Dichlorobenzene	330	330 U	700 U	710 U	690 U
2-Methylphenol	330	330 U	700 U	710 U	690 U
bis(2-Chloroisopropyl)ether	330	330 U	700 U	710 U	690 U
4-Methylphenol	330	330 U	700 U	710 U	690 U
N-Nitroso-di-n-propylamine	330	330 U	700 U	710 U	690 U
Hexachloroethane	330	330 U	700 U	710 U	690 U
Nitrobenzene	330	330 U	700 U	710 U	690 U
Isophorone	330	330 U	700 U	710 U	690 U
2-Nitrophenol	330	330 U	700 U	710 U	690 U
2,4-Dimethylphenol	330	330 U	700 U	710 U	690 U
Benzoic acid	1600	1600 U	3400 UJ	3400 UJ	3300 UJ
bis(2-Chloroethoxy)methane	330	330 U	700 U	710 U	690 U
2,4-Dichlorophenol	330	330 U	700 U	710 U	690 U
1,2,4-Trichlorobenzene	330	330 U	700 U	710 U	690 U
Naphthalene	330	330 U	2400	3900 D	690 U
4-Chloroaniline	330	330 U	700 U	710 U	690 U
Hexachlorobutadiene	330	330 U	700 U	710 U	690 U
4-Chloro-3-methylphenol	330	330 U	700 U	710 U	690 U
2-Methylnaphthalene	330	330 U	8900	13000 D	690 U
Hexachlorocyclopentadiene	330	330 U	700 U	710 U	690 U
2,4,6-Trichlorophenol	330	330 U	700 U	710 U	690 U
2,4,5-Trichlorophenol	1600	1600 U	3400 U	3400 U	3300 U
2-Chloronaphthalene	330	330 U	700 U	710 U	690 U
2-Nitroaniline	1600	1600 U	3400 U	3400 U	3300 U
Dimethyl phthalate	330	330 U	700 U	710 U	690 U
Acenaphthylene	330	330 U	700 U	710 U	690 U
2,6-Dinitrotoluene	330	330 U	700 U	710 U	690 U

x = Denotes the coelution of benzo (b) fluoranthene and benzo (k) fluoranthene.

Flagged Data Table
(Full Validation)

SAMPLE ID:		02SS104X0101XX	02SS105X0101XX	02SS105X0101XD	02SS106X0101XX
LAB NUMBER:		222884	222891	222890	222892
DATE SAMPLED:		10/17/88	10/17/88	10/17/88	10/17/88
MATRIX:		Soil	Soil	Soil	Soil
SEMI-VOLATILE ORGANIC COMPOUNDS					
UNITS: ug/kg	CRDL				
3-Nitroaniline	1600	1600 U	3400 U	3400 U	3300 U
Acenaphthene	330	330 U	700 U	710 U	690 U
2,4-Dinitrophenol	1600	1600 U	3400 U	3400 U	3300 U
4-Nitrophenol	1600	1600 U	3400 UJ	3400 UJ	3300 UJ
Dibenzofuran	330	330 U	700 U	710 U	690 U
2,4-Dinitrotoluene	330	330 U	700 U	710 U	690 U
Diethyl phthalate	330	330 U	700 U	710 U	690 U
4-Chlorophenyl phenyl ether	330	330 U	700 U	710 U	690 U
Fluorene	330	330 U	140 JJ	710 U	690 U
4-Nitroaniline	1600	1600 U	3400 U	3400 U	3300 U
4,6-Dinitro-2-methylphenol	1600	1600 U	3400 U	3400 U	3300 U
N-Nitrosodiphenylamine(1)	330	330 U	700 U	710 U	690 U
4-Bromophenyl phenyl ether	330	330 U	700 U	710 U	690 U
Hexachlorobenzene	330	330 U	700 U	710 U	690 U
Pentachlorophenol	1600	1600 U	3400 U	3400 U	3300 U
Phenanthrene	330	330 U	700 U	79 JJ	220 JJ
Anthracene	330	330 U	700 U	710 U	690 U
Di-n-butyl phthalate	330	330 U	700 U	710 U	690 U
Fluoranthene	330	330 U	700 U	710 U	570 JJ
Pyrene	330	330 U	700 U	710 U	690
Butyl benzyl phthalate	330	330 U	700 U	710 U	690 U
3,3'-Dichlorobenzidine	660	670 U	1400 U	1400 U	1400 U
Benzo(a)anthracene	330	330 U	700 U	710 U	390 JJ
Chrysene	330	330 U	700 U	710 U	540 JJ
bis(2-Ethylhexyl)phthalate	330	490 UJB	1200 UJB	1200 UJB	1200 UJB
Di-n-octyl phthalate	330	330 U	700 U	710 U	690 U
Benzo(b)fluoranthene	330	330 U	700 U	710 U	440 JJ
Benzo(k)fluoranthene	330	330 UJ	700 U	710 U	340 JJ
Benzo(a)pyrene	330	330 U	700 U	710 U	440 JJ
Indeno(1,2,3-cd)pyrene	330	330 U	700 U	710 U	200 JJ
Dibenzo(a,h)anthracene	330	330 U	700 U	710 U	690 U
Benzo(g,h,i)perylene	330	330 U	700 U	710 U	230 JJ
Dilution Factor		1.0	2.0	2.0	2.0
Percent Solids		99	94	93	96
Laboratory Method Blank		G2J22935C02	G2J22935B07	G2J22935B07	G2J22935B07
Petroleum Hydrocarbons(mg/kg)	50	50 U	3400	3400	520
Percent Solids		92	92	95	96

x = Denotes the coelution of benzo (b) fluoranthene and benzo (k) fluoranthene.

Flagged Data Table
(Full Validation)

	SAMPLE ID:	02SB103X0401XX	02SB103X1601XX	02SB103X2401XX	02SB104X1601XX	02SB104X1601XD	02SB104X2101XX	02SB105X2601XX	02SB105X3101XX
	LAB NUMBER:	222572	222575	222578	222900	222899	222901	221396	221398
	DATE SAMPLED:	10/14/88	10/14/88	10/14/88	10/17/88	10/17/88	10/17/88	10/07/88	10/07/88
	MATRIX:	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
METALS COMPOUNDS UNITS: mg/kg	ANALYTICAL METHOD	CRDL							
Lead	P/F	1	11	0.91 []	4.5	3.3	8	3.2	8.8	2.1
Percent Solids			89	97	83	96	94	92	82	81
Laboratory Method Blank			15409A	15409A	15409A	15409A	15409A	15409A	154108	154108

Flagged Data Table
(Full Validation)

	SAMPLE ID:	02SS104X0101XX	02SS105X0101XD	02SS105X0101XX	02SS106X0101XX
	LAB NUMBER:	222898	222902	222903	222904
	DATE SAMPLED:	10/17/88	10/17/88	10/17/88	10/17/88
	MATRIX:	Soil	Soil	Soil	Soil
METALS COMPOUNDS UNITS: mg/kg	ANALYTICAL METHOD	CRDL				
Lead	P/F	1	35	25	34	18
Percent Solids			99	93	94	96
Laboratory Method Blank			15409A	15409A	15409A	15409A

Flagged Data Table
(Full Validation)

SAMPLE ID:	03SB106X1101XX	03SB106X2601XX	03SB107X1601XX	03SB107X2601XX	03SB108X0401XX	03SB108X0801XX	03SB108X2001XX
LAB NUMBER:	220666	220662	220813	220814	220658	220660	220661
DATE SAMPLED:	10/04/88	10/04/88	10/04/88	10/04/88	10/03/88	10/03/88	10/03/88
MATRIX:	Soil	Soil	Soil	Soil	Soil *	Soil *	Soil
VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL						
Chloromethane	10	11 U	11 U	11 U	12 U	3500 U	1400 U	11 U
Bromomethane	10	11 U	11 U	11 U	12 U	3500 U	1400 U	11 U
Vinyl chloride	10	11 U	11 U	11 U	12 U	3500 U	1400 U	11 U
Chloroethane	10	11 U	11 U	11 U	12 U	3500 U	1400 U	11 U
Methylene chloride	5	140 UJB	46 UJB	120 UJB	95 UJB	4400 UJB	4200 UJB	140 UJB
Acetone	10	190 UJB	130 UJB	96 UJB	160 UJB	4000 UJB	3900 UJB	180 UJB
Carbon disulfide	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
1,1-Dichloroethene	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
1,1-Dichloroethane	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
1,2-Dichloroethene(Total)	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
Chloroform	5	5 U	2 JJ	5 U	6 U	1800 U	680 U	5 U
1,2-Dichloroethane	5	5 U	6 UJ	5 U	6 U	1800 U	680 U	5 U
2-Butanone	10	11 UR	11 UR	11 UR	12 UR	3500 UR	1400 UR	11 UR
1,1,1-Trichloroethane	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
Carbon tetrachloride	5	5 U	6 UJ	5 U	6 U	1800 U	680 U	5 U
Vinyl acetate	10	11 U	11 U	11 U	12 U	3500 U	1400 U	11 U
Bromodichloromethane	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
1,2-Dichloropropane	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
Cis-1,3-Dichloropropene	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
Trichloroethene	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
Dibromochloromethane	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
1,1,2-Trichloroethane	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
Benzene	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
Trans-1,3-Dichloropropene	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
Bromoform	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
4-Methyl-2-pentanone	10	11 U	11 U	11 U	12 U	3500 U	1400 U	11 U
2-Hexanone	10	11 U	11 U	11 U	12 U	3500 U	1400 U	11 U
Tetrachloroethene	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
1,1,2,2-Tetrachloroethane	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
Toluene	5	5 U	6 U	5 U	6 U	1800 U	680 U	5 U
Chlorobenzene	5	5 U	6 U	5 U	6 U	1800 UJB	710 UJB	5 U
Ethylbenzene	5	5 U	6 U	5 U	6 U	1700 JJ	680 U	5 U
Styrene	5	5 U	6 U	5 U	6 U	1800 UJB	820 UJB	5 U
Xylenes (Total)	5	5 U	6 U	5 U	6 U	17000	2200 UJB	5 U
Dilution Factor		1.0	1.0	1.0	1.0	1.0	1.0	1.0
Percent Solids		93	87	94	84	89	92	92
Laboratory Method Blank		GH020990C12	GH020989A12	GH021583A10	GH021136C10	CN021721C13	CN021721C13	GH022110C10

* = Medium level analysis.

Flagged Data Table
(Full Validation)

SAMPLE ID:	03SB106X1101XX	03SB106X2601XX	03SB107X1601XX	03SB107X2601XX	03SB108X0401XX	03SB108X0801XX	03SB108X2001XX
LAB NUMBER:	220666	220662	220813	220814	220658	220660	220661
DATE SAMPLED:	10/03/88	10/03/88	10/04/88	10/04/88	10/03/88	10/03/88	10/03/88
MATRIX:	Soil	Soil	Soil	Soil	Soil	Soil	Soil
SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL						
Phenol	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
bis(2-Chloroethyl)ether	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2-Chlorophenol	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
1,3-Dichlorobenzene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
1,4-Dichlorobenzene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Benzyl alcohol	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
1,2-Dichlorobenzene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2-Methylphenol	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
bis(2-Chloroisopropyl)ether	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
4-Methylphenol	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
N-Nitroso-di-n-propylamine	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Hexachloroethane	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Nitrobenzene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Isophorone	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2-Nitrophenol	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2,4-Dimethylphenol	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Benzoic acid	1600	1700 U	1800 U	1700 U	1800 U	3600 U	1700 U	1700 U
bis(2-Chloroethoxy)methane	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2,4-Dichlorophenol	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
1,2,4-Trichlorobenzene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Naphthalene	330	350 U	380 U	340 U	380 U	3900	2400	490
4-Chloroaniline	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Hexachlorobutadiene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
4-Chloro-3-methylphenol	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2-Methylnaphthalene	330	350 U	380 U	340 U	380 U	8500	5300	500
Hexachlorocyclopentadiene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2,4,6-Trichlorophenol	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2,4,5-Trichlorophenol	1600	1700 U	1800 U	1700 U	1800 U	3600 U	1700 U	1700 U
2-Chloronaphthalene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2-Nitroaniline	1600	1700 U	1800 U	1700 U	1800 U	3600 U	1700 U	1700 U
Dimethyl phthalate	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Acenaphthylene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2,6-Dinitrotoluene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U

Flagged Data Table
(Full Validation)

SAMPLE ID:		03SB106X1101XX	03SB106X2601XX	03SB107X1601XX	03SB107X2601XX	03SB108X0401XX	03SB108X0801XX	03SB108X2001XX
LAB NUMBER:		220666	220662	220813	220814	220658	220660	220661
DATE SAMPLED:		10/03/88	10/03/88	10/04/88	10/04/88	10/03/88	10/03/88	10/03/88
MATRIX:		Soil	Soil	Soil	Soil	Soil	Soil	Soil
SEMI-VOLATILE ORGANIC COMPOUNDS								
UNITS: ug/kg	CRDL							
3-Nitroaniline	1600	1700 U	1800 U	1700 U	1800 U	3600 U	1700 U	1700 U
Acenaphthene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2,4-Dinitrophenol	1600	1700 U	1800 U	1700 U	1800 U	3600 U	1700 U	1700 U
4-Nitrophenol	1600	1700 U	1800 U	1700 U	1800 U	3600 U	1700 U	1700 U
Dibenzofuran	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
2,4-Dinitrotoluene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Diethyl phthalate	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
4-Chlorophenyl phenyl ether	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Fluorene	330	350 U	380 U	340 U	380 U	100 JJ	63 JJ	360 U
4-Nitroaniline	1600	1700 U	1800 U	1700 U	1800 U	3600 U	1700 U	1700 U
4,6-Dinitro-2-methylphenol	1600	1700 U	1800 U	1700 U	1800 U	3600 U	1700 U	1700 U
N-Nitrosodiphenylamine	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
4-Bromophenyl phenyl ether	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Hexachlorobenzene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Pentachlorophenol	1600	1700 U	1800 U	1700 U	1800 U	3600 U	1700 U	1700 U
Phenanthrene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Anthracene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Di-n-butyl phthalate	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Fluoranthene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Pyrene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Butyl benzyl phthalate	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
3,3'-Dichlorobenzidine	660	710 U	760 U	690 U	760 U	1500 U	720 U	720 U
Benzo(a)anthracene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Chrysene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
bis(2-Ethylhexyl)phthalate	330	130 JJ	140 JJ	340 U	380 U	150 JJ	150 JJ	230 JJ
Di-n-octyl phthalate	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Benzo(b)fluoranthene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Benzo(k)fluoranthene	330	350 UJ	380 UJ	340 UJ	380 UJ	740 UJ	360 UJ	360 UJ
Benzo(a)pyrene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Indeno(1,2,3-cd)pyrene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Dibenzo(a,h)anthracene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Benzo(g,h,i)perylene	330	350 U	380 U	340 U	380 U	740 U	360 U	360 U
Dilution Factor		1	1	1	0.97	2	1	1
Percent Solids		93	87	94	84	89	92	92
Laboratory Method Blank		GH020765A02	GH020765A02	GH02100A02	GH02100A02	GH020765A02	GH020765A02	GH020765A02
Petroleum Hydrocarbons (mg/kg)	50	50 U	60 U	50 U	60 U	1200	440	910
Percent Solids		93	87	94	84	89	92	92

Flagged Data Table
(Full Validation)

	SAMPLE ID:	03SB106X1101XX	03SB106X2601XX	03SB107X1601XX	03SB107X2601XX	03SB108X0401XX	03SB108X0801XX	03SB108X2001XX
	LAB NUMBER:	220676	220675	220817	220818	220671	220672	220673
	DATE SAMPLED:	10/04/88	10/04/88	10/04/88	10/04/88	10/03/88	10/03/88	10/03/88
	MATRIX:	Soil	Soil	Soil	Soil	Soil	Soil	Soil
METALS COMPOUNDS UNITS: mg/kg	ANALYTICAL METHOD	CRDL						
Lead	F	1	2.3	1.5	2.2	1.9	11	4.8	4.2
Percent Solids			93	87	94	84	89	92	92
Laboratory Method Blank			15410B	15410B	15410B	15410B	15410B	15410B	15410B

Flagged Data Table
(Full Validation)

SAMPLE ID: OSBP111X4101XX
LAB NUMBER: 222401
DATE SAMPLED: 10/12/88
MATRIX: Soil *

VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL	
Chloromethane	10	1500 U
Bromomethane	10	1500 U
Vinyl Chloride	10	1500 U
Chloroethane	10	1500 U
Methylene Chloride	5	2100 UJB
Acetone	10	9000 UJB
Carbon Disulfide	5	760 U
1,1-Dichloroethene	5	760 U
1,1-Dichloroethane	5	760 U
1,2-Dichloroethene (total)	5	760 U
Chloroform	5	760 U
1,2-Dichloroethane	5	760 U
2-Butanone	10	1500 UR
1,1,1-Trichloroethane	5	760 U
Carbon Tetrachloride	5	760 U
Vinyl Acetate	10	1500 U
Bromodichloromethane	5	760 U
1,2-Dichloropropane	5	760 U
Trans-1,3-Dichloropropene	5	760 U
Trichloroethene	5	760 U
Dibromochloromethane	5	760 U
1,1,2-Trichloroethane	5	760 U
Benzene	5	680 JJ
Cis-1,3-Dichloropropene	5	760 U
Bromoform	5	760 U
4-Methyl-2-Pentanone	10	1500 U
2-Hexanone	10	1500 U
Tetrachloroethene	5	760 U
1,1,2,2-Tetrachloroethane	5	760 U
Toluene	5	760 U
Ethylbenzene	5	760 U
Chlorobenzene	5	17000
Styrene	5	760 U
Xylenes (Total)	5	74000 J
Dilution Factor		1
Percent Solids		82

Laboratory Method Blank CN022755803

* = Medium level analysis.

Flagged Data Table
(Full Validation)

SAMPLE ID:	OSBP111X4101XX
LAB NUMBER:	222401
DATE SAMPLED:	10/12/88
MATRIX:	Soil

SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL	
Phenol	330	2000 U
bis(2-Chloroethyl)ether	330	2000 U
2-Chlorophenol	330	2000 U
1,3-Dichlorobenzene	330	2000 U
1,4-Dichlorobenzene	330	2000 U
Benzyl alcohol	330	2000 U
1,2-Dichlorobenzene	330	2000 U
2-Methylphenol	330	2000 U
bis(2-Chloroisopropyl)ether	330	2000 U
4-Methylphenol	330	2000 U
N-Nitroso-di-n-propylamine	330	2000 U
Hexachloroethane	330	2000 U
Nitrobenzene	330	2000 U
Isophorone	330	2000 U
2-Nitrophenol	330	2000 U
2,4-Dimethylphenol	330	2000 U
Benzoic acid	1600	9800 U
bis(2-Chloroethoxy)methane	330	2000 U
2,4-Dichlorophenol	330	2000 U
1,2,4-Trichlorobenzene	330	2000 U
Naphthalene	330	11000
4-Chloroaniline	330	2000 U
Hexacholorobutadiene	330	2000 U
4-Chloro-3-Methylphenol	330	2000 U
2-Methylnaphthalene	330	31000
Hexachlorocyclopentadiene	330	2000 U
2,4,6-Trichlorophenol	330	2000 U
2,4,5-Trichlorophenol	1600	9800 U
2-Chloronaphthalene	330	2000 U
2-Nitroaniline	1600	9800 U
Dimethylphthalate	330	2000 U
Acenaphthylene	330	2000 U
2,6-Dinitrotoluene	330	2000 U

Flagged Data Table
(Full Validation)

SAMPLE ID:	OSBP111X4101XX
LAB NUMBER:	222401
DATE SAMPLED:	10/12/88
MATRIX:	Soil

SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL	
3-Nitroaniline	1600	9800 U
Acenaphthene	330	370 JJ
2,4-Dinitrophenol	1600	9800 U
4-Nitrophenol	1600	9800 U
Dibenzofuran	330	490 JJ
2,4-Dinitrotoluene	330	2000 U
Diethylphthalate	330	2000 U
4-Chlorophenyl-phenylether	330	2000 U
Fluorene	330	440 JJ
4-Nitroaniline	1600	9800 U
4,6-Dinitro-2-methylphenol	1600	9800 U
N-Nitrosodiphenylamine	330	2000 U
4-Bromophenyl-phenylether	330	2000 U
Hexachlorobenzene	330	2000 U
Pentachlorophenol	1600	9800 U
Phenanthrene	330	2000 U
Anthracene	330	2000 U
Di-n-butylphthalate	330	2000 U
Fluoranthene	330	2000 U
Pyrene	330	2000 U
Butylbenzylphthalate	330	2000 U
3,3'-Dichlorobenzidine	660	4000 U
Benzo(a)Anthracene	330	2000 U
Chrysene	330	2000 U
bis(2-Ethylhexyl)phthalate	330	2000 U
Di-n-octylphthalate	330	2000 U
Benzo(b)Fluoranthene	330	2000 U
Benzo(k)Fluoranthene	330	2000 U
Benzo(a)Pyrene	330	2000 U
Indeno(1,2,3-cd)pyrene	330	2000 U
Dibenz(a,h)anthracene	330	2000 U
Benzo(g,h,i,)perylene	330	2000 U
Dilution Factor		5
Percent Solid		82
Laboratory Method Blank		GJ022589816
Petroleum Hydrocarbons (mg/kg)	50	420
PHC Percent Solids		86

Flagged Data Table
(Full Validation)

SAMPLE ID:	OSBP111X4101XX
LAB NUMBER:	222403
DATE SAMPLED:	10/12/88
MATRIX:	Soil

METALS COMPOUNDS UNITS: mg/kg	ANALYTICAL METHOD	CRDL	
Lead	F	1	1 []
Percent Solids			82
Laboratory Method Blank			15409A

Laboratory Report of Analysis

SAMPLE ID: SAMPLER BLANK
LAB NUMBER: 220667
DATE SAMPLED: 10/03/88
MATRIX: Soil

VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL	
Chloromethane	10	10 U
Bromomethane	10	10 U
Vinyl chloride	10	10 U
Chloroethane	10	10 U
Methylene chloride	5	22 B
Acetone	10	21 B
Carbon disulfide	5	5 U
1,1-Dichloroethene	5	5 U
1,1-Dichloroethane	5	5 U
1,2-Dichloroethene(Total)	5	5 U
Chloroform	5	3 J
1,2-Dichloroethane	5	5 U
2-Butanone	10	10 U
1,1,1-Trichloroethane	5	5 U
Carbon tetrachloride	5	5 U
Vinyl acetate	10	10 U
Bromodichloromethane	5	5 U
1,2-Dichloropropane	5	5 U
Cis-1,3-Dichloropropene	5	5 U
Trichloroethene	5	5 U
Dibromochloromethane	5	5 U
1,1,2-Trichloroethane	5	5 U
Benzene	5	5 U
Trans-1,3-Dichloropropene	5	5 U
Bromoform	5	5 U
4-Methyl-2-pentanone	10	10 U
2-Hexanone	10	10 U
Tetrachloroethene	5	5 U
1,1,2,2-Tetrachloroethane	5	5 U
Toluene	5	5 U
Chlorobenzene	5	5 U
Ethylbenzene	5	5 U
Styrene	5	5 U
Xylenes (Total)	5	5 U
Dilution Factor		1.0

Laboratory Method Blank GH021136C10

Laboratory Report of Analysis

SAMPLE ID:	SAMPLER BLANK
LAB NUMBER:	220667
DATE SAMPLED:	10/03/88
MATRIX:	Soil

SEMI-VOALTILE ORGANIC COMPOUNDS

UNITS: ug/kg	CRDL	
Phenol	330	330 U
bis(2-Chloroethyl)ether	330	330 U
2-Chlorophenol	330	330 U
1,3-Dichlorobenzene	330	330 U
1,4-Dichlorobenzene	330	330 U
Benzyl alcohol	330	330 U
1,2-Dichlorobenzene	330	330 U
2-Methylphenol	330	330 U
bis(2-Chloroisopropyl)ether	330	330 U
4-Methylphenol	330	330 U
N-Nitroso-di-n-propylamine	330	330 U
Hexachloroethane	330	330 U
Nitrobenzene	330	330 U
Isophorone	330	330 U
2-Nitrophenol	330	330 U
2,4-Dimethylphenol	330	330 U
Benzoic acid	1600	1600 U
bis(2-Chloroethoxy)methane	330	330 U
2,4-Dichlorophenol	330	330 U
1,2,4-Trichlorobenzene	330	330 U
Naphthalene	330	330 U
4-Chloroaniline	330	330 U
Hexachlorobutadiene	330	330 U
4-Chloro-3-methylphenol	330	330 U
2-Methylnaphthalene	330	330 U
Hexachlorocyclopentadiene	330	330 U
2,4,6-Trichlorophenol	330	330 U
2,4,5-Trichlorophenol	1600	1600 U
2-Chloronaphthalene	330	330 U
2-Nitroaniline	1600	1600 U
Dimethyl phthalate	330	330 U
Acenaphthylene	330	330 U
2,6-Dinitrotoluene	330	330 U

Laboratory Report of Analysis

SAMPLE ID:	SAMPLER BLANK
LAB NUMBER:	220667
DATE SAMPLED:	10/03/88
MATRIX:	Soil

SEMI-VOALTILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL	
3-Nitroaniline	1600	1600 U
Acenaphthene	330	330 U
2,4-Dinitrophenol	1600	1600 U
4-Nitrophenol	1600	1600 U
Dibenzofuran	330	330 U
2,4-Dinitrotoluene	330	330 U
Diethyl phthalate	330	330 U
4-Chlorophenyl phenyl ether	330	330 U
Fluorene	330	330 U
4-Nitroaniline	1600	1600 U
4,6-Dinitro-2-methylphenol	1600	1600 U
N-Nitrosodiphenylamine	330	330 U
4-Bromophenyl phenyl ether	330	330 U
Hexachlorobenzene	330	330 U
Pentachlorophenol	1600	1600 U
Phenanthrene	330	330 U
Anthracene	330	330 U
Di-n-butyl phthalate	330	330 U
Fluoranthene	330	330 U
Pyrene	330	330 U
Butyl benzyl phthalate	330	330 U
3,3'-Dichlorobenzidine	660	660 U
Benzo(a)anthracene	330	330 U
Chrysene	330	330 U
bis(2-Ethylhexyl)phthalate	330	330 U
Di-n-octyl phthalate	330	330 U
Benzo(b)fluoranthene	330	330 U
Benzo(k)fluoranthene	330	330 U
Benzo(a)pyrene	330	330 U
Indeno(1,2,3-cd)pyrene	330	330 U
Dibenzo(a,h)anthracene	330	330 U
Benzo(g,h,i)perylene	330	330 U
Dilution Factor		1
Laboratory Method Blank		GJ021040B04
Petroleum Hydrocarbons (mg/l)	1	1 U

Laboratory Report of Analysis

SAMPLE ID: SAMPLER BLANK
LAB NUMBER: 223428
DATE SAMPLED: 10/19/88
MATRIX: Soil

VOLATILE ORGANIC COMPOUNDS UNITS: ug/kg	CRDL	
Chloromethane	10	10 U
Bromomethane	10	10 U
Vinyl chloride	10	10 U
Chloroethane	10	10 U
Methylene chloride	5	41 B
Acetone	10	19 B
Carbon disulfide	5	5 U
1,1-Dichloroethene	5	5 U
1,1-Dichloroethane	5	5 U
1,2-Dichloroethene(Total)	5	5 U
Chloroform	5	3 J
1,2-Dichloroethane	5	5 U
2-Butanone	10	13
1,1,1-Trichloroethane	5	5 U
Carbon tetrachloride	5	5 U
Vinyl acetate	10	10 U
Bromodichloromethane	5	5 U
1,2-Dichloropropane	5	5 U
Cis-1,3-Dichloropropene	5	5 U
Trichloroethene	5	5 U
Dibromochloromethane	5	5 U
1,1,2-Trichloroethane	5	5 U
Benzene	5	5 U
Trans-1,3-Dichloropropene	5	5 U
Bromoform	5	5 U
4-Methyl-2-pentanone	10	10 U
2-Hexanone	10	10 U
Tetrachloroethene	5	5 U
1,1,2,2-Tetrachloroethane	5	5 U
Toluene	5	5 U
Chlorobenzene	5	5 U
Ethylbenzene	5	5 U
Styrene	5	5 U
Xylenes (Total)	5	5 U
Dilution Factor		1.0

Laboratory Method Blank GH023602A10

Laboratory Report of Analysis

SAMPLE ID:	SAMPLER BLANK
LAB NUMBER:	223435
DATE SAMPLED:	10/19/88
MATRIX:	Soil

METALS COMPOUNDS UNITS: ug/l	ANALYTICAL METHOD	CRDL	
Lead	F	5	0.91 U

Laboratory Method Blank 15414C

APPENDIX G

LABORATORY ANALYTICAL WATER DATA

APPENDIX G-1 - APPENDIX DATA
APPENDIX G-2 - VALIDATED DATA

APPENDIX G-1

APPENDIX DATA

Laboratory Report of Analysis

	SAMPLE ID:	01GW101XXX01XX	01GW102XXX01XX
	LAB NUMBER:	227649	227646
	DATE SAMPLED:	11/08/88	11/08/88
	MATRIX:	Water	Water
VOLATILE ORGANIC COMPOUNDS UNITS: ug/l	CRDL		
Chloromethane	10	10 U	10 U
Bromomethane	10	10 U	10 U
Vinyl chloride	10	10 U	10 U
Chloroethane	10	10 U	10 U
Methylene chloride	5	2 J	5 U
Acetone	10	10 U	10 U
Carbon disulfide	5	5 U	5 U
1,1-Dichloroethene	5	5 U	5 U
1,1-Dichloroethane	5	6	5 U
1,2-Dichloroethene(Total)	5	5 U	5 U
Chloroform	5	5 U	5 U
1,2-Dichloroethane	5	5 U	5 U
2-Butanone	10	26	8 J
1,1,1-Trichloroethane	5	5 U	5 U
Carbon tetrachloride	5	5 U	5 U
Vinyl acetate	10	10 U	10 U
Bromodichloromethane	5	5 U	5 U
1,2-Dichloropropane	5	5 U	5 U
Cis-1,3-Dichloropropene	5	5 U	5 U
Trichloroethene	5	5 U	5 U
Dibromochloromethane	5	5 U	5 U
1,1,2-Trichloroethane	5	5 U	5 U
Benzene	5	28	5 U
Trans-1,3-Dichloropropene	5	5 U	5 U
Bromoform	5	5 U	5 U
4-Methyl-2-pentanone	10	10 U	10 U
2-Hexanone	10	10 U	10 U
Tetrachloroethene	5	5 U	1 J
1,1,2,2-Tetrachloroethane	5	5 U	5 U
Toluene	5	5 U	5 U
Chlorobenzene	5	1 J	5 U
Ethylbenzene	5	6	5 U
Styrene	5	5 U	5 U
Xylenes (Total)	5	5 U	5 U
Dilution Factor		1	1
Laboratory Method Blank		CB881111C13	CB881110B11

Laboratory Report of Analysis

		SAMPLE ID:	01GW101XXX01XX	01GW102XXX01XX
		LAB NUMBER:	227649	227646
		DATE SAMPLED:	11/08/88	11/08/88
		MATRIX:	Water	Water
SEMI-VOLATILE ORGANIC COMPOUNDS				
UNITS: ug/l	CRDL			
Phenol	10		10 U	10 U
bis(2-Chloroethyl)ether	10		10 U	10 U
2-Chlorophenol	10		10 U	10 U
1,3-Dichlorobenzene	10		10 U	10 U
1,4-Dichlorobenzene	10		6 J	10 U
Benzyl alcohol	10		10 U	10 U
1,2-Dichlorobenzene	10		5 J	10 U
2-Methylphenol	10		10 U	10 U
bis(2-Chloroisopropyl)ether	10		10 U	10 U
4-Methylphenol	10		10 U	10 U
N-Nitroso-di-n-propylamine	10		10 U	10 U
Hexachloroethane	10		10 U	10 U
Nitrobenzene	10		10 U	10 U
Isophorone	10		10 U	10 U
2-Nitrophenol	10		10 U	10 U
2,4-Dimethylphenol	10		10 U	10 U
Benzoic acid	50		50 U	50 U
bis(2-Chloroethoxy)methane	10		10 U	10 U
2,4-Dichlorophenol	10		10 U	10 U
1,2,4-Trichlorobenzene	10		10 U	10 U
Naphthalene	10		10 U	10 U
4-Chloroaniline	10		10 U	10 U
Hexachlorobutadiene	10		10 U	10 U
4-Chloro-3-methylphenol	10		10 U	10 U
2-Methylnaphthalene	10		10 U	10 U
Hexachlorocyclopentadiene	10		10 U	10 U
2,4,6-Trichlorophenol	10		10 U	10 U
2,4,5-Trichlorophenol	50		50 U	50 U
2-Chloronaphthalene	10		10 U	10 U
2-Nitroaniline	50		50 U	50 U
Dimethyl phthalate	10		10 U	10 U
Acenaphthylene	10		10 U	10 U
2,6-Dinitrotoluene	10		10 U	10 U

Laboratory Report of Analysis

		SAMPLE ID:	01GW101XXX01XX	01GW102XXX01XX
		LAB NUMBER:	227649	227646
		DATE SAMPLED:	11/08/88	11/08/88
		MATRIX:	Water	Water
SEMI-VOLATILE ORGANIC COMPOUNDS				
UNITS: ug/l	CRDL			
3-Nitroaniline	50		50 U	50 U
Acenaphthene	10		10 U	10 U
2,4-Dinitrophenol	50		50 U	50 U
4-Nitrophenol	50		50 U	50 U
Dibenzofuran	10		10 U	10 U
2,4-Dinitrotoluene	10		10 U	10 U
Diethyl phthalate	10		10 U	10 U
4-Chlorophenyl phenyl ether	10		10 U	10 U
Fluorene	10		10 U	10 U
4-Nitroaniline	50		50 U	50 U
4,6-Dinitro-2-methylphenol	50		50 U	50 U
N-Nitrosodiphenylamine(1)	10		10 U	10 U
4-Bromophenyl phenyl ether	10		10 U	10 U
Hexachlorobenzene	10		10 U	10 U
Pentachlorophenol	50		50 U	50 U
Phenanthrene	10		10 U	10 U
Anthracene	10		10 U	10 U
Di-n-butyl phthalate	10		10 U	10 U
Fluoranthene	10		10 U	10 U
Pyrene	10		10 U	10 U
Butyl benzyl phthalate	10		10 U	10 U
3,3'-Dichlorobenzidine	20		20 U	20 U
Benzo(a)anthracene	10		10 U	10 U
Chrysene	10		10 U	10 U
bis(2-Ethylhexyl)phthalate	10		5 JB	17 B
Di-n-octyl phthalate	10		10 U	10 U
Benzo(b)fluoranthene	10		10 U	10 U
Benzo(k)fluoranthene	10		10 U	10 U
Benzo(a)pyrene	10		10 U	10 U
Indeno(1,2,3-cd)pyrene	10		10 U	10 U
Dibenzo(a,h)anthracene	10		10 U	10 U
Benzo(g,h,i)perylene	10		10 U	10 U
Dilution Factor			1	1
Laboratory Method Blank		GH028228A22		GH028228A22
Petroleum Hydrocarbons (mg/l)	1		1 U	1 U

Laboratory Report of Analysis

	SAMPLE ID:	01GW101XXX01XX	01GW102XXX01XX
	LAB NUMBER:	227659	227656
	DATE SAMPLED:	11/08/88	11/08/88
	MATRIX:	Water	Water
METALS COMPOUNDS UNITS: ug/l	ANALYTICAL METHOD	CRDL	
Lead	F	5	1.4 []N	0.91 UN
Laboratory Method Blank			15410G	15410G

Laboratory Report of Analysis

	SAMPLE ID:	02GW103XXX01XX	02GW103XXX01XD	02GW104XXX01XX	02GW104XXX01XXRE	02GW105XXX01XX
	LAB NUMBER:	228083	228084	227648	227648	227647
	DATE SAMPLED:	11/09/88	11/09/88	11/08/88	11/08/88	11/08/88
	MATRIX:	Water	Water	Water	Water	Water
VOLATILE ORGANIC COMPOUNDS UNITS: ug/l	CRDL					
Chloromethane	10	500 U	830 U	10 U	130 U	10 U
Bromomethane	10	500 U	830 U	10 U	130 U	10 U
Vinyl chloride	10	500 U	830 U	10 U	130 U	10 U
Chloroethane	10	500 U	830 U	10 U	130 U	10 U
Methylene chloride	5	94 JB	420 U	5 U	63 U	5 U
Acetone	10	290 JB	830 U	8 JB	130 U	6 JB
Carbon disulfide	5	250 U	420 U	5 U	63 U	5 U
1,1-Dichloroethene	5	250 U	420 U	5 U	63 U	5 U
1,1-Dichloroethane	5	250 U	420 U	5 U	63 U	5 U
1,2-Dichloroethene(Total)	5	250 U	420 U	2 J	63 U	5 U
Chloroform	5	250 U	420 U	5 U	63 U	5 U
1,2-Dichloroethane	5	250 U	420 U	5 U	63 U	5 U
2-Butanone	10	500 U	830 U	10 U	130 U	7 J
1,1,1-Trichloroethane	5	250 U	420 U	5 U	63 U	5 U
Carbon tetrachloride	5	250 U	420 U	5 U	63 U	5 U
Vinyl acetate	10	500 U	830 U	10 U	130 U	10 U
Bromodichloromethane	5	250 U	420 U	5 U	63 U	5 U
1,2-Dichloropropane	5	250 U	420 U	5 U	63 U	5 U
Cis-1,3-Dichloropropene	5	250 U	420 U	5 U	63 U	5 U
Trichloroethene	5	250 U	420 U	5 U	63 U	5 U
Dibromochloromethane	5	250 U	420 U	5 U	63 U	5 U
1,1,2-Trichloroethane	5	250 U	420 U	5 U	63 U	5 U
Benzene	5	2000	1700	650 E	2000 D	77
Trans-1,3-Dichloropropene	5	250 U	420 U	5 U	63 U	5 U
Bromoform	5	250 U	420 U	5 U	63 U	5 U
4-Methyl-2-pentanone	10	500 U	830 U	10 U	130 U	10 U
2-Hexanone	10	500 U	830 U	10 U	130 U	10 U
Tetrachloroethene	5	250 U	420 U	5 U	63 U	5 U
1,1,2,2-Tetrachloroethane	5	250 U	420 U	5 U	63 U	5 U
Toluene	5	9200	9300	2 J	63 U	5 U
Chlorobenzene	5	250 U	420 U	5 U	63 U	5 U
Ethylbenzene	5	710	840	600 E	640 D	39
Styrene	5	250 U	420 U	5 U	63 U	5 U
Xylenes (Total)	5	2900	3800	110	120 D	5 U
Dilution Factor		1	1	1	1	1
Laboratory Method Blank		CC881115C09	CC881120B09	CB881110B11	CB881110B11	CB881111C13

Laboratory Report of Analysis

SAMPLE ID:		02GW103XXX01XX	02GW103XXX01XXDL	02GW103XXX01XD	02GW103XXX01XDDL	02GW104XXX01XX	02GW105XXX01XX	02GW105XXX01XXRE
LAB NUMBER:		228083	228083	228084	228084	227648	227647	227647
DATE SAMPLED:		11/09/88	11/09/88	11/09/88	11/09/88	11/08/88	11/08/88	11/08/88
MATRIX:		Water	Water	Water	Water	Water	Water	Water
SEMI-VOLATILE ORGANIC COMPOUNDS								
UNITS: ug/l	CRDL							
Phenol	10	80 U	800 U	1700 U	3300 U	23	10 U	10 U
bis(2-Chloroethyl)ether	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
2-Chlorophenol	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
1,3-Dichlorobenzene	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
1,4-Dichlorobenzene	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
Benzyl alcohol	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
1,2-Dichlorobenzene	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
2-Methylphenol	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
bis(2-Chloroisopropyl)ether	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
4-Methylphenol	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
Hexachloroethane	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
Nitrobenzene	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
Isophorone	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
2-Nitrophenol	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
2,4-Dimethylphenol	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
Benzoic acid	50	400 U	4000 U	8300 U	17000 U	50 U	50 U	50 U
bis(2-Chloroethoxy)methane	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
2,4-Dichlorophenol	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
Naphthalene	10	8900 E	8700 D	40000	62000 D	88	4 J	5 J
4-Chloroaniline	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
Hexachlorobutadiene	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
2-Methylnaphthalene	10	17000 E	18000 D	63000 E	100000 D	62	2 J	3 J
Hexachlorocyclopentadiene	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	50	400 U	4000 U	8300 U	17000 U	50 U	50 U	50 U
2-Chloronaphthalene	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
2-Nitroaniline	50	400 U	4000 U	8300 U	17000 U	50 U	50 U	50 U
Dimethyl phthalate	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
Acenaphthylene	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U
2,6-Dinitrotoluene	10	80 U	800 U	1700 U	3300 U	10 U	10 U	10 U

NA = Not available; will be reported when received from laboratory.

Laboratory Report of Analysis

SAMPLE ID:		02GW103XXX01XX		02GW103XXX01XXDL		02GW103XXX01XD		02GW103XXX01XDDL		02GW104XXX01XX		02GW105XXX01XX		02GW105XXX01XXRE	
LAB NUMBER:		228083		228083		228084		228084		227648		227647		227647	
DATE SAMPLED:		11/09/88		11/09/88		11/09/88		11/09/88		11/08/88		11/08/88		11/08/88	
MATRIX:		Water		Water		Water		Water		Water		Water		Water	
SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/l	CRDL														
3-Nitroaniline	50	400	U	4000	U	8300	U	17000	U	50	U	50	U	50	U
Acenaphthene	10	710		910	D	4700		6500	D	6	J	10	U	10	U
2,4-Dinitrophenol	50	400	U	4000	U	8300	U	17000	U	50	U	50	U	50	U
4-Nitrophenol	50	400	U	4000	U	8300	U	17000	U	50	U	50	U	50	U
Dibenzofuran	10	650		790	JD	4400		6600	D	6	J	10	U	10	U
2,4-Dinitrotoluene	10	80	U	800	U	1700	U	3300	U	10	U	10	U	10	U
Diethyl phthalate	10	80	U	800	U	1700	U	3300	U	10	U	10	U	10	U
4-Chlorophenyl phenyl ether	10	80	U	800	U	1700	U	3300	U	10	U	10	U	10	U
Fluorene	10	1000		1300	D	7000		10000	D	7	J	10	U	10	U
4-Nitroaniline	50	400	U	4000	U	8300	U	17000	U	50	U	50	U	50	U
4,6-Dinitro-2-methylphenol	50	400	U	4000	U	8300	U	17000	U	50	U	50	U	50	U
N-Nitrosodiphenylamine(1)	10	80	U	800	U	1700	U	3300	U	10	U	10	U	10	U
4-Bromophenyl phenyl ether	10	80	U	800	U	1700	U	3300	U	10	U	10	U	10	U
Hexachlorobenzene	10	80	U	800	U	1700	U	3300	U	10	U	10	U	10	U
Pentachlorophenol	50	400	U	4000	U	8300	U	17000	U	50	U	50	U	50	U
Phenanthrene	10	3700	E	6900	D	30000		43000	D	26		4	J	4	J
Anthracene	10	1300		1700	D	9200		11000	D	4	J	10	U	10	U
Di-n-butyl phthalate	10	80	U	800	U	1700	U	3300	U	10	U	10	U	10	U
Fluoranthene	10	2800	E	4800	D	20000		26000	D	5	J	10	U	10	U
Pyrene	10	2700	E	3500	D	20000		27000	D	5	J	10	U	10	U
Butyl benzyl phthalate	10	80	U	800	U	1700	U	3300	U	10	U	10	U	10	U
3,3'-Dichlorobenzidine	20	160	U	1600	U	3300	U	6600	U	20	U	20	U	20	U
Benzo(a)anthracene	10	1000		1100	D	6100		7500	D	10	U	10	U	10	U
Chrysene	10	830		1000	D	5400		7200	D	10	U	10	U	10	U
bis(2-Ethylhexyl)phthalate	10	190	B	800	U	1700	U	3300	U	20	B	10	B	8	J
Di-n-octyl phthalate	10	80	U	800	U	1700	U	3300	U	10	U	10	U	10	U
Benzo(b)fluoranthene	10	430		370	JD	2600		2600	JD	10	U	10	U	10	U
Benzo(k)fluoranthene	10	590		610	JD	3100		3300	D	10	U	10	U	10	U
Benzo(a)pyrene	10	460		440	JD	2600		1900	JD	10	U	10	U	10	U
Indeno(1,2,3-cd)pyrene	10	120		800	U	580	J	3300	U	10	U	10	U	10	U
Dibenzo(a,h)anthracene	10	41	J	800	U	1700	U	3300	U	10	U	10	U	10	U
Benzo(g,h,i)perylene	10	110		800	U	500	J	3300	U	10	U	10	U	10	U
Dilution Factor		8		80		170		330		1		1		1	
Laboratory Method Blank		GJ028531A21		GJ028531A08		GJ028531A21		GJ028531A21		GH028228A22		GH028228A22		GH030703A08	
Petroleum Hydrocarbons(mg/l)	1	6.8	*	NR		1.2	*	NR		2.9		7.8		NR	

* = Result given is the amount of floating petroleum product in the sample, % V/V. NR = Not required.

Laboratory Report of Analysis

	SAMPLE ID:	02GW103XXX01XX	02GW103XXX01XD	02GW104XXX01XX	02GW105XXX01XX
	LAB NUMBER:	228090	228091	227658	227657
	DATE SAMPLED:	11/09/88	11/09/88	11/08/88	11/08/88
	MATRIX:	Water	Water	Water	Water
METALS COMPOUNDS UNITS: ug/l	ANALYTICAL METHOD	CRDL				
Lead	F	5	116 N	127 N	137 N	12 N
Laboratory Method Blank			15410G	15410G	15410G	15410G

Laboratory Report of Analysis

	SAMPLE ID:	03GW106XXX01XX	03GW107XXX01XX	03GW108XXX01XX	03GW108XXX01XD	03GW109XXX01XX	03GW110XXX01XX
	LAB NUMBER:	227654	227367	227650	227651	227653	227373
	DATE SAMPLED:	11/08/88	11/07/88	11/08/88	11/08/88	11/08/88	11/07/88
	MATRIX:	Water	Water	Water	Water	Water	Water
VOLATILE ORGANIC COMPOUNDS UNITS: ug/l	CRDL						
Chloromethane	10	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	10	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	10	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	10	10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	5	2 J	5 U	5 U	5 U	5 U	5 U
Acetone	10	10 U	6 JB	10 U	8 JB	10 U	10 U
Carbon disulfide	5	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	5	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene(Total)	5	5 U	5 U	5 U	5 U	5 U	2 J
Chloroform	5	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
2-Butanone	10	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-Trichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
Carbon tetrachloride	5	5 U	5 U	5 U	5 U	5 U	5 U
Vinyl acetate	10	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	5	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	5	5 U	5 U	5 U	5 U	5 U	5 U
Cis-1,3-Dichloropropene	5	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene	5	5 U	5 U	5 U	2 J	5 U	2 J
Dibromochloromethane	5	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
Benzene	5	5 U	5 U	7	6	5 U	5 U
Trans-1,3-Dichloropropene	5	5 U	5 U	5 U	5 U	5 U	5 U
Bromoform	5	5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	10	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	10	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	5	7	6	5 U	5 U	7	12
1,1,2,2-Tetrachloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	5	1 JB	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	5	5 U	5 U	5 U	5 U	5 U	2 J
Ethylbenzene	5	5 U	5 U	54	23	5 U	5 U
Styrene	5	5 U	5 U	5 U	5 U	5 U	5 U
Xylenes (Total)	5	5 U	5 U	58	23	5 U	5 U
Dilution Factor		1	1	1	1	1	1
Laboratory Method Blank		CG881113C13	CB881110B11	CB881111B13	CC881113C12	CB881111B13	CB881110B11

Laboratory Report of Analysis

SAMPLE ID:		03GW106XXX01XX	03GW107XXX01XX	03GW108XXX01XX	03GW108XXX01XXRE	03GW108XXX01XD	03GW108XXX01XDRE	03GW109XXX01XX	03GW110XXX01XX
LAB NUMBER:		227654	227367	227650	227650	227651	227651	227653	227373
DATE SAMPLED:		11/08/88	11/07/88	11/08/88	11/08/88	11/08/88	11/08/88	11/08/88	11/07/88
MATRIX:		Water	Water	Water	Water	Water	Water	Water	Water
SEMI-VOLATILE ORGANIC COMPOUNDS									
UNITS: ug/l	CRDL								
Phenol	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl)ether	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzyl alcohol	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroisopropyl)ether	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Isophorone	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzoic acid	50	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
bis(2-Chloroethoxy)methane	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	10	10 U	10 U	15	10 U	9 J	3 J	10 U	10 U
4-Chloroaniline	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	10	10 U	10 U	4 J	10 U	2 J	10 U	10 U	10 U
Hexachlorocyclopentadiene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	50	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
2-Chloronaphthalene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	50	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Dimethyl phthalate	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Laboratory Report of Analysis

SAMPLE ID:		03GW106XXX01XX	03GW107XXX01XX	03GW108XXX01XX	03GW108XXX01XXRE	03GW108XXX01XD	03GW108XXX01XDRE	03GW109XXX01XX	03GW110XXX01XX
LAB NUMBER:		227654	227367	227650	227650	227651	227651	227653	227373
DATE SAMPLED:		11/08/88	11/07/88	11/08/88	11/08/88	11/08/88	11/08/88	11/08/88	11/07/88
MATRIX:		Water	Water	Water	Water	Water	Water	Water	Water
SEMI-VOLATILE ORGANIC COMPOUNDS									
UNITS: ug/l	CRDL								
3-Nitroaniline	50	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Acenaphthene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	50	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
4-Nitrophenol	50	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Dibenzofuran	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Diethyl phthalate	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl phenyl ether	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline	50	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
4,6-Dinitro-2-methylphenol	50	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
N-Nitrosodiphenylamine(1)	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl phenyl ether	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	50	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Phenanthrene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butyl phthalate	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	3 J
Fluoranthene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Butyl benzyl phthalate	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	20	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Benzo(a)anthracene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	10	6 JB	9 J	14 B	10 U	24 B	10	20 B	20
Di-n-octyl phthalate	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dilution Factor		1	1	1	1	1	1	1	1
Laboratory Method Blank		GH028228A22	GJ027731C21	GH028228A22	GH032137C07	GH028228A22	GH030703A08	GH028228A22	GJ027731C21
Petroleum Hydrocarbons (mg/l)	1	1 U	1 U	1 U	-	2.1	-	8.0	1 U

Laboratory Report of Analysis

	SAMPLE ID:	03GW106XXX01XX	03GW107XXX01XX	03GW108XXX01XX	03GW108XXX01XD	03GW109XXX01XX	03GW110XXX01XX
	LAB NUMBER:	227664	227382	227660	227661	227662	227391
	DATE SAMPLED:	11/08/88	11/07/88	11/08/88	11/08/88	11/08/88	11/07/88
	MATRIX:	Water	Water	Water	Water	Water	Water
METALS COMPOUNDS UNITS: ug/l	ANALYTICAL METHOD	CRDL					
Lead	F	5	160 SN	3.4 [IN	88 N	3.2 [IN	59 SN	90 N
Laboratory Method Blank			15410G	15410G	15410G	15410G	15410G	15410G

Laboratory Report of Analysis

		MW-112	MW-111	MW-111 OFFSET
	SAMPLE ID:	05GW044XXX01XX	05GW046XXX01XX	05GW050XXX01XX
	LAB NUMBER:	228082	228087	228086
	DATE SAMPLED:	11/09/88	11/09/88	11/09/88
	MATRIX:	Water	Water	Water
VOLATILE ORGANIC COMPOUNDS UNITS: ug/l	CRDL			
Chloromethane	10	10 U	1000 U	1300 U
Bromomethane	10	10 U	1000 U	1300 U
Vinyl chloride	10	10 U	1000 U	1300 U
Chloroethane	10	10 U	1000 U	1300 U
Methylene chloride	5	1 JB	120 J	630 U
Acetone	10	10 U	580 J	810 JB
Carbon disulfide	5	5 U	500 U	630 U
1,1-Dichloroethene	5	5 U	500 U	630 U
1,1-Dichloroethane	5	5 U	500 U	630 U
1,2-Dichloroethene(Total)	5	1 J	500 U	630 U
Chloroform	5	1 J	500 U	630 U
1,2-Dichloroethane	5	5 U	500 U	630 U
2-Butanone	10	10 U	1000 U	1300 U
1,1,1-Trichloroethane	5	5 U	500 U	630 U
Carbon tetrachloride	5	5 U	500 U	630 U
Vinyl acetate	10	10 U	1000 U	1300 U
Bromodichloromethane	5	5 U	500 U	630 U
1,2-Dichloropropane	5	5 U	500 U	630 U
Cis-1,3-Dichloropropene	5	5 U	500 U	630 U
Trichloroethene	5	9	500 U	630 U
Dibromochloromethane	5	5 U	500 U	630 U
1,1,2-Trichloroethane	5	5 U	500 U	630 U
Benzene	5	5 U	7900	8600
Trans-1,3-Dichloropropene	5	5 U	500 U	630 U
Bromoform	5	5 U	500 U	630 U
4-Methyl-2-pentanone	10	10 U	1000 U	1300 U
2-Hexanone	10	10 U	1000 U	1300 U
Tetrachloroethene	5	7	500 U	630 U
1,1,2,2-Tetrachloroethane	5	5 U	500 U	630 U
Toluene	5	5 U	13000	13000
Chlorobenzene	5	5 U	500 U	630 U
Ethylbenzene	5	5 U	1000	850
Styrene	5	5 U	500 U	630 U
Xylenes (Total)	5	5 U	4300	3900
Dilution Factor		1	1	1
Laboratory Method Blank		CC881115C09	CB881117A09	CC881120B09

Laboratory Report of Analysis

	MW-112	MW-111		MW-111 OFFSET	
SAMPLE ID:	05GW044XXX01XX	05GW046XXX01XX	05GW046XXX01XXRE	05GW050XXX01XX	05GW050XXX01XXRE
LAB NUMBER:	228082	228087	228087	228086	228086
DATE SAMPLED:	11/09/88	11/09/88	11/09/88	11/09/88	11/09/88
MATRIX:	Water	Water	Water	Water	Water

SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/l	CRDL					
Phenol	10	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethyl)ether	10	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	10	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	10	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	10	10 U	10 U	10 U	10 U	10 U
Benzyl alcohol	10	10 U	10 U	10 U	6 J	10 U
1,2-Dichlorobenzene	10	10 U	10 U	10 U	10 U	10 U
2-Methylphenol	10	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroisopropyl)ether	10	10 U	10 U	10 U	10 U	10 U
4-Methylphenol	10	10 U	10 U	10 U	10 U	10 U
N-Nitroso-di-n-propylamine	10	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	10	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	10	10 U	10 U	10 U	10 U	10 U
Isophorone	10	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	10	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	10	10 U	10 U	10 U	10 U	10 U
Benzoic acid	50	50 U	50 U	50 U	19 J	21 J
bis(2-Chloroethoxy)methane	10	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	10	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	10	10 U	10 U	10 U	10 U	10 U
Naphthalene	10	10 U	150	260	190	240
4-Chloroaniline	10	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	10	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	10	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	10	10 U	130	150	150	160
Hexachlorocyclopentadiene	10	10 U	10 U	10 U	10 U	10 U
2,4,6-Trichlorophenol	10	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	50	50 U	50 U	50 U	50 U	50 U
2-Chloronaphthalene	10	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	50	50 U	50 U	50 U	50 U	50 U
Dimethyl phthalate	10	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	10	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	10	10 U	10 U	10 U	10 U	10 U

NA = Not available; will be reported when received from laboratory.

Laboratory Report of Analysis

SAMPLE ID:		05GW044XXX01XX	05GW046XXX01XX	05GW046XXX01XXRE	05GW050XXX01XX	05GW050XXX01XXRE
LAB NUMBER:		228082	228087	228087	228086	228086
DATE SAMPLED:		11/09/88	11/09/88	11/09/88	11/09/88	11/09/88
MATRIX:		Water	Water	Water	Water	Water
SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/l	CRDL					
3-Nitroaniline	50	50 U	50 U	50 U	50 U	50 U
Acenaphthene	10	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	50	50 U	50 U	50 U	50 U	50 U
4-Nitrophenol	50	50 U	50 U	50 U	50 U	50 U
Dibenzofuran	10	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	10	10 U	10 U	10 U	10 U	10 U
Diethyl phthalate	10	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl phenyl ether	10	10 U	10 U	10 U	10 U	10 U
Fluorene	10	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline	50	50 U	50 U	50 U	50 U	50 U
4,6-Dinitro-2-methylphenol	50	50 U	50 U	50 U	50 U	50 U
N-Nitrosodiphenylamine(1)	10	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl phenyl ether	10	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	10	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	50	50 U	50 U	50 U	50 U	50 U
Phenanthrene	10	10 U	10 U	10 U	10 U	10 U
Anthracene	10	10 U	10 U	10 U	10 U	10 U
Di-n-butyl phthalate	10	10 U	2 J	4 J	10 U	10 U
Fluoranthene	10	10 U	10 U	10 U	10 U	10 U
Pyrene	10	10 U	10 U	10 U	10 U	10 U
Butyl benzyl phthalate	10	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	20	20 U	20 U	20 U	20 U	20 U
Benzo(a)anthracene	10	10 U	10 U	10 U	10 U	10 U
Chrysene	10	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	10	42 B	33 B	9 J	63 B	28
Di-n-octyl phthalate	10	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	10	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	10	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	10	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene	10	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10	10 U	10 U	10 U	10 U	10 U
Dilution Factor		1	1	1	1	1
Laboratory Method Blank		GJ028531A21	GJ028531A21	GJ030703A16	GJ028531A21	GH030703A08
Petroleum Hydrocarbons(mg/l)	1	1 U	6.6	NR	5.1	NR

NR = Not required.

Laboratory Report of Analysis

	MW-112	MW-111	MW-111 OFFSET
SAMPLE ID:	05GW044XXX01XX	05GW046XXX01XX	05GW050XXX01XX
LAB NUMBER:	228089	228095	228092
DATE SAMPLED:	11/09/88	11/09/88	11/09/88
MATRIX:	Water	Water	Water

METALS COMPOUNDS UNITS: ug/l	ANALYTICAL METHOD	CRDL			
Lead	F	5	7.9 SN	135 N	112 N
Laboratory Method Blank			15410G	15410G	15410G

APPENDIX G-2

VALIDATED DATA

Flagged Data Table
(Full Validation)

	SAMPLE ID:	01GW101XXX01XX	01GW102XXX01XX
	LAB NUMBER:	227649	227646
	DATE SAMPLED:	11/08/88	11/08/88
	MATRIX:	Water	Water
VOLATILE ORGANIC COMPOUNDS UNITS: ug/l	CRDL		
Chloromethane	10	10 U	10 U
Bromomethane	10	10 U	10 U
Vinyl chloride	10	10 U	10 U
Chloroethane	10	10 U	10 U
Methylene chloride	5	2 JJ	10 UJB
Acetone	10	10 U	80 UJB
Carbon disulfide	5	5 U	5 U
1,1-Dichloroethene	5	5 U	5 U
1,1-Dichloroethane	5	6	5 U
1,2-Dichloroethene(Total)	5	5 U	5 U
Chloroform	5	5 U	5 U
1,2-Dichloroethane	5	5 U	5 U
2-Butanone	10	26 J	8 JJ
1,1,1-Trichloroethane	5	5 U	5 U
Carbon tetrachloride	5	5 U	5 U
Vinyl acetate	10	10 U	10 U
Bromodichloromethane	5	5 U	5 U
1,2-Dichloropropane	5	5 U	5 U
Cis-1,3-Dichloropropene	5	5 U	5 U
Trichloroethene	5	5 U	5 U
Dibromochloromethane	5	5 U	5 U
1,1,2-Trichloroethane	5	5 U	5 U
Benzene	5	28	5 U
Trans-1,3-Dichloropropene	5	5 U	5 U
Bromoform	5	5 U	5 U
4-Methyl-2-pentanone	10	10 U	10 U
2-Hexanone	10	10 U	10 U
Tetrachloroethene	5	5 U	1 JJ
1,1,2,2-Tetrachloroethane	5	5 U	5 U
Toluene	5	5 U	5 U
Chlorobenzene	5	1 JJ	5 U
Ethylbenzene	5	6	5 U
Styrene	5	5 U	5 U
Xylenes (Total)	5	5 U	5 U
Dilution Factor		1	1
Laboratory Method Blank		CB881111C13	CB881110811

Flagged Data Table
(Full Validation)

	SAMPLE ID:	01GW101XXX01XX	01GW102XXX01XX
	LAB NUMBER:	227649	227646
	DATE SAMPLED:	11/08/88	11/08/88
	MATRIX:	Water	Water
SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/l	CRDL		
Phenol	10	10 U	10 U
bis(2-Chloroethyl)ether	10	10 U	10 U
2-Chlorophenol	10	10 U	10 U
1,3-Dichlorobenzene	10	10 U	10 U
1,4-Dichlorobenzene	10	6 JJ	10 U
Benzyl alcohol	10	10 U	10 U
1,2-Dichlorobenzene	10	5 JJ	10 U
2-Methylphenol	10	10 U	10 U
bis(2-Chloroisopropyl)ether	10	10 U	10 U
4-Methylphenol	10	10 U	10 U
N-Nitroso-di-n-propylamine	10	10 U	10 U
Hexachloroethane	10	10 U	10 U
Nitrobenzene	10	10 U	10 U
Isophorone	10	10 U	10 U
2-Nitrophenol	10	10 U	10 U
2,4-Dimethylphenol	10	10 U	10 U
Benzoic acid	50	50 U	50 U
bis(2-Chloroethoxy)methane	10	10 U	10 U
2,4-Dichlorophenol	10	10 U	10 U
1,2,4-Trichlorobenzene	10	10 U	10 U
Naphthalene	10	10 U	10 U
4-Chloroaniline	10	10 U	10 U
Hexachlorobutadiene	10	10 U	10 U
4-Chloro-3-methylphenol	10	10 U	10 U
2-Methylnaphthalene	10	10 U	10 U
Hexachlorocyclopentadiene	10	10 UJ	10 UJ
2,4,6-Trichlorophenol	10	10 U	10 U
2,4,5-Trichlorophenol	50	50 U	50 U
2-Chloronaphthalene	10	10 U	10 U
2-Nitroaniline	50	50 U	50 U
Dimethyl phthalate	10	10 U	10 U
Acenaphthylene	10	10 U	10 U
2,6-Dinitrotoluene	10	10 U	10 U

Flagged Data Table
(Full Validation)

	SAMPLE ID:	01GW101XXX01XX	01GW102XXX01XX
	LAB NUMBER:	227649	227646
	DATE SAMPLED:	11/08/88	11/08/88
	MATRIX:	Water	Water
SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/l	CRDL		
3-Nitroaniline	50	50 U	50 U
Acenaphthene	10	10 U	10 U
2,4-Dinitrophenol	50	50 U	50 U
4-Nitrophenol	50	50 U	50 U
Dibenzofuran	10	10 U	10 U
2,4-Dinitrotoluene	10	10 U	10 U
Diethyl phthalate	10	10 U	10 U
4-Chlorophenyl phenyl ether	10	10 U	10 U
Fluorene	10	10 U	10 U
4-Nitroaniline	50	50 U	50 U
4,6-Dinitro-2-methylphenol	50	50 U	50 U
N-Nitrosodiphenylamine(1)	10	10 U	10 U
4-Bromophenyl phenyl ether	10	10 U	10 U
Hexachlorobenzene	10	10 U	10 U
Pentachlorophenol	50	50 U	50 U
Phenanthrene	10	10 U	10 U
Anthracene	10	10 U	10 U
Di-n-butyl phthalate	10	10 U	10 U
Fluoranthene	10	10 U	10 U
Pyrene	10	10 U	10 U
Butyl benzyl phthalate	10	10 U	10 U
3,3'-Dichlorobenzidine	20	20 U	20 U
Benzo(a)anthracene	10	10 U	10 U
Chrysene	10	10 U	10 U
bis(2-Ethylhexyl)phthalate	10	150 UJB	150 UJB
Di-n-octyl phthalate	10	10 U	10 U
Benzo(b)fluoranthene	10	10 U	10 U
Benzo(k)fluoranthene	10	10 U	10 U
Benzo(a)pyrene	10	10 U	10 U
Indeno(1,2,3-cd)pyrene	10	10 U	10 U
Dibenzo(a,h)anthracene	10	10 U	10 U
Benzo(g,h,i)perylene	10	10 U	10 U
Dilution Factor		1	1
Laboratory Method Blank		GH028228A22	GH028228A22
Petroleum Hydrocarbons (mg/l)	1	1 U	1 U

Flagged Data Table
(Full Validation)

	SAMPLE ID:	01GW101XXX01XX	01GW102XXX01XX
	LAB NUMBER:	227659	227656
	DATE SAMPLED:	11/08/88	11/08/88
	MATRIX:	Water	Water
METALS COMPOUNDS UNITS: ug/l	ANALYTICAL METHOD	CRDL	
Lead	F	5	1.4 []J	0.91 UJ
Laboratory Method Blank			15410G	15410G

Flagged Data Table
(Full Validation)

	SAMPLE ID:	02GW103XXX01XX	02GW103XXX01XD	02GW104XXX01XX	02GW105XXX01XX
	LAB NUMBER:	228083	228084	227648	227647
	DATE SAMPLED:	11/09/88	11/09/88	11/08/88	11/08/88
	MATRIX:	Water	Water	Water	Water
VOLATILE ORGANIC COMPOUNDS UNITS: ug/l	CRDL				
Chloromethane	10	500 U	830 U	10 U	10 U
Bromomethane	10	500 UJ	830 U	10 U	10 U
Vinyl chloride	10	500 U	830 U	10 U	10 U
Chloroethane	10	500 U	830 U	10 U	10 U
Methylene chloride	5	500 UJB	420 U	10 UJB	10 UJB
Acetone	10	1500 UJB	4200 UJB	80 UJB	80 UJB
Carbon disulfide	5	250 U	420 U	5 U	5 U
1,1-Dichloroethene	5	250 U	420 U	5 U	5 U
1,1-Dichloroethane	5	250 U	420 U	5 U	5 U
1,2-Dichloroethene(Total)	5	250 U	420 U	2 JJ	5 U
Chloroform	5	250 U	420 U	5 U	5 U
1,2-Dichloroethane	5	250 U	420 U	5 U	5 U
2-Butanone	10	500 UR	830 UR	10 UR	7 JJ
1,1,1-Trichloroethane	5	250 U	420 U	5 U	5 U
Carbon tetrachloride	5	250 U	420 U	5 U	5 U
Vinyl acetate	10	500 U	830 U	10 U	10 U
Bromodichloromethane	5	250 U	420 U	5 U	5 U
1,2-Dichloropropane	5	250 U	420 U	5 U	5 U
Cis-1,3-Dichloropropene	5	250 U	420 U	5 U	5 U
Trichloroethene	5	250 U	420 U	5 U	5 U
Dibromochloromethane	5	250 U	420 U	5 U	5 U
1,1,2-Trichloroethane	5	250 U	420 U	5 U	5 U
Benzene	5	2000	1700	2000 D	77
Trans-1,3-Dichloropropene	5	250 U	420 U	5 U	5 U
Bromoform	5	250 U	420 U	5 U	5 U
4-Methyl-2-pentanone	10	500 U	830 U	10 U	10 U
2-Hexanone	10	500 U	830 U	10 U	10 U
Tetrachloroethene	5	250 U	420 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5	250 U	420 U	5 U	5 U
Toluene	5	9200	9300	2 JJ	5 U
Chlorobenzene	5	250 U	420 U	5 U	5 U
Ethylbenzene	5	710	840	640 D	39
Styrene	5	250 U	420 U	5 U	5 U
Xylenes (Total)	5	2900	3800	110	5 U
Dilution Factor		50	83.3	1	1
Laboratory Method Blank		CC881115C09	CC881120809	CB881110811	CB881111C13

Flagged Data Table
(Full Validation)

	SAMPLE ID:	02GW103XXX01XX	02GW103XXX01XD	02GW104XXX01XX	02GW105XXX01XX
	LAB NUMBER:	228083	228084	227648	227647
	DATE SAMPLED:	11/09/88	11/09/88	11/08/88	11/08/88
	MATRIX:	Water	Water	Water	Water
SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/l	CRDL				
Phenol	10	80 U	1700 U	23	10 U
bis(2-Chloroethyl)ether	10	80 UJ	1700 UJ	10 U	10 U
2-Chlorophenol	10	80 U	1700 U	10 U	10 UR
1,3-Dichlorobenzene	10	80 U	1700 U	10 U	10 U
1,4-Dichlorobenzene	10	80 U	1700 U	10 U	10 U
Benzyl alcohol	10	80 U	1700 U	10 U	10 U
1,2-Dichlorobenzene	10	80 U	1700 U	10 U	10 U
2-Methylphenol	10	80 U	1700 U	10 U	10 UR
bis(2-Chloroisopropyl)ether	10	80 U	1700 U	10 U	10 U
4-Methylphenol	10	80 U	1700 U	10 U	10 UR
N-Nitroso-di-n-propylamine	10	80 U	1700 U	10 U	10 U
Hexachloroethane	10	80 U	1700 U	10 U	10 U
Nitrobenzene	10	80 U	1700 U	10 U	10 U
Isophorone	10	80 U	1700 U	10 U	10 U
2-Nitrophenol	10	80 U	1700 U	10 U	10 UR
2,4-Dimethylphenol	10	80 U	1700 U	10 U	10 UR
Benzoic acid	50	400 U	8300 U	50 U	50 UR
bis(2-Chloroethoxy)methane	10	80 U	1700 U	10 U	10 U
2,4-Dichlorophenol	10	80 U	1700 U	10 U	10 UR
1,2,4-Trichlorobenzene	10	80 U	1700 U	10 U	10 U
Naphthalene	10	8700 D	40000	88	4 JJ
4-Chloroaniline	10	80 U	1700 U	10 U	10 U
Hexachlorobutadiene	10	80 U	1700 U	10 U	10 U
4-Chloro-3-methylphenol	10	80 U	1700 U	10 U	10 UR
2-Methylnaphthalene	10	18000 D	100000 D	62	2 JJ
Hexachlorocyclopentadiene	10	80 U	1700 U	10 UJ	10 UJ
2,4,6-Trichlorophenol	10	80 U	1700 U	10 U	10 UR
2,4,5-Trichlorophenol	50	400 U	8300 U	50 U	50 UR
2-Chloronaphthalene	10	80 U	1700 U	10 U	10 U
2-Nitroaniline	50	400 U	8300 U	50 U	50 U
Dimethyl phthalate	10	80 U	1700 U	10 U	10 U
Acenaphthylene	10	80 U	1700 U	10 U	10 U
2,6-Dinitrotoluene	10	80 U	1700 U	10 U	10 U

* = Result given is the amount of floating petroluem product in the sample, % V/V.

Flagged Data Table
(Full Validation)

SAMPLE ID:		02GW103XXX01XX		02GW103XXX01XD		02GW104XXX01XX		02GW105XXX01XX	
LAB NUMBER:		228083		228084		227648		227647	
DATE SAMPLED:		11/09/88		11/09/88		11/08/88		11/08/88	
MATRIX:		Water		Water		Water		Water	
SEMI-VOLATILE ORGANIC COMPOUNDS									
UNITS: ug/l	CRDL								
3-Nitroaniline	50	400	U	8300	U	50	U	50	U
Acenaphthene	10	710		4700		6	JJ	10	U
2,4-Dinitrophenol	50	400	U	8300	U	50	U	50	UR
4-Nitrophenol	50	400	U	8300	U	50	U	50	UR
Dibenzofuran	10	650		4400		6	JJ	10	U
2,4-Dinitrotoluene	10	80	U	1700	U	10	U	10	U
Diethyl phthalate	10	80	U	1700	U	10	U	10	U
4-Chlorophenyl phenyl ether	10	80	U	1700	U	10	U	10	U
Fluorene	10	1000		7000		7	JJ	10	U
4-Nitroaniline	50	400	U	8300	U	50	U	50	U
4,6-Dinitro-2-methylphenol	50	400	U	8300	U	50	U	50	UR
N-Nitrosodiphenylamine(1)	10	80	U	1700	U	10	U	10	U
4-Bromophenyl phenyl ether	10	80	U	1700	U	10	U	10	U
Hexachlorobenzene	10	80	U	1700	U	10	U	10	U
Pentachlorophenol	50	400	U	8300	U	50	U	50	UR
Phenanthrene	10	6900	D	30000		26		4	JJ
Anthracene	10	1300		9200		4	JJ	10	U
Di-n-butyl phthalate	10	80	U	1700	U	10	U	10	U
Fluoranthene	10	4800	D	20000		5	JJ	10	U
Pyrene	10	3500	D	20000		5	JJ	10	U
Butyl benzyl phthalate	10	80	U	1700	U	10	U	10	U
3,3'-Dichlorobenzidine	20	160	U	3300	U	20	U	20	U
Benzo(a)anthracene	10	1000		6100		10	U	10	U
Chrysene	10	830		5400		10	U	10	U
bis(2-Ethylhexyl)phthalate	10	480	UJB	10200	UJB	150	UJB	150	UJB
Di-n-octyl phthalate	10	80	U	1700	U	10	U	10	U
Benzo(b)fluoranthene	10	430		2600		10	U	10	U
Benzo(k)fluoranthene	10	590		3100		10	U	10	U
Benzo(a)pyrene	10	460		2600		10	U	10	U
Indeno(1,2,3-cd)pyrene	10	120		580	JJ	10	U	10	U
Dibenzo(a,h)anthracene	10	41	JJ	1700	U	10	U	10	U
Benzo(g,h,i)perylene	10	110		500	JJ	10	U	10	U
Dilution Factor		8		170		1		1	
Laboratory Method Blank		GJ028531A21		GJ028531A21		GH028228A22		GH028228A22	
Petroleum Hydrocarbons(mg/l)	1	6.8	*	1.2	*	2.9		7.8	

* = Result given is the amount of floating petroluem product in the sample, % V/V.

Flagged Data Table
(Full Validation)

	SAMPLE ID:	02GW103XXX01XX	02GW103XXX01XD	02GW104XXX01XX	02GW105XXX01XX
	LAB NUMBER:	228090	228091	227658	227657
	DATE SAMPLED:	11/09/88	11/09/88	11/08/88	11/08/88
	MATRIX:	Water	Water	Water	Water
METALS COMPOUNDS UNITS: ug/l	ANALYTICAL METHOD	CRDL				
Lead	F	5	116 J	127 J	137 J	12 J
Laboratory Method Blank			15410G	15410G	15410G	15410G

Flagged Data Table
(Full Validation)

	SAMPLE ID:	03GW106XXX01XX	03GW107XXX01XX	03GW108XXX01XX	03GW108XXX01XD	03GW109XXX01XX	03GW110XXX01XX
	LAB NUMBER:	227654	227367	227650	227651	227653	227373
	DATE SAMPLED:	11/08/88	11/07/88	11/08/88	11/08/88	11/08/88	11/07/88
	MATRIX:	Water	Water	Water	Water	Water	Water
VOLATILE ORGANIC COMPOUNDS UNITS: ug/l	CRDL						
Chloromethane	10	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	10	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	10	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	10	10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	5	2 JJ	10 UJB	20 UJB	5 U	10 UJB	10 UJB
Acetone	10	10 UJ	80 UJB	10 U	40 UJB	10 U	80 UJB
Carbon disulfide	5	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	5	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene(Total)	5	5 U	5 U	5 U	5 U	5 U	2 JJ
Chloroform	5	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
2-Butanone	10	10 UR	10 UR	10 UR	10 UR	10 UR	10 UR
1,1,1-Trichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
Carbon tetrachloride	5	5 U	5 U	5 U	5 U	5 U	5 U
Vinyl acetate	10	10 U	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	5	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	5	5 U	5 U	5 U	5 U	5 U	5 U
Cis-1,3-Dichloropropene	5	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene	5	5 U	5 U	5 U	2 JJ	5 U	2 JJ
Dibromochloromethane	5	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
Benzene	5	5 U	5 U	7	6	5 U	5 U
Trans-1,3-Dichloropropene	5	5 U	5 U	5 U	5 U	5 U	5 U
Bromoform	5	5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	10	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	10	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	5	7	6	5 U	5 U	7	12
1,1,2,2-Tetrachloroethane	5	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	5	10 UJB	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	5	5 U	5 U	5 U	5 U	5 U	2 JJ
Ethylbenzene	5	5 U	5 U	54	23	5 U	5 U
Styrene	5	5 U	5 U	5 U	5 U	5 U	5 U
Xylenes (Total)	5	5 U	5 U	58	23	5 U	5 U
Dilution Factor		1	1	1	1	1	1
Laboratory Method Blank		CG881113C13	CB881110B11	CB881111B13	CC881113C12	CB881111B13	CB881110B11

Flagged Data Table
(Full Validation)

SAMPLE ID:	03GW106XXX01XX	03GW107XXX01XX	03GW108XXX01XX	03GW108XXX01XD	03GW109XXX01XX	03GW110XXX01XX
LAB NUMBER:	227654	227367	227650	227651	227653	227373
DATE SAMPLED:	11/08/88	11/07/88	11/08/88	11/08/88	11/08/88	11/07/88
MATRIX:	Water	Water	Water	Water	Water	Water
SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/l	CRDL					
Phenol	10	10 U	10 U	10 UR	10 UR	10 U	10 U
bis(2-Chloroethyl)ether	10	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	10	10 U	10 U	10 UR	10 UR	10 U	10 U
1,3-Dichlorobenzene	10	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	10	10 U	10 U	10 U	10 U	10 U	10 U
Benzyl alcohol	10	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	10	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylphenol	10	10 U	10 U	10 UR	10 UR	10 U	10 U
bis(2-Chloroisopropyl)ether	10	10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol	10	10 U	10 U	10 UR	10 UR	10 U	10 U
N-Nitroso-di-n-propylamine	10	10 U	10 U	10 U	10 U	10 U	10 U
Hexachloroethane	10	10 U	10 U	10 U	10 U	10 U	10 U
Nitrobenzene	10	10 U	10 U	10 U	10 U	10 U	10 U
Isophorone	10	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitrophenol	10	10 U	10 U	10 UR	10 UR	10 U	10 U
2,4-Dimethylphenol	10	10 U	10 U	10 UR	10 UR	10 U	10 U
Benzoic acid	50	50 U	50 U	50 UR	50 UR	50 U	50 U
bis(2-Chloroethoxy)methane	10	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	10	10 U	10 U	10 UR	10 UR	10 U	10 U
1,2,4-Trichlorobenzene	10	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	10	10 U	10 U	15	9 JJ	10 U	10 U
4-Chloroaniline	10	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	10	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	10	10 U	10 U	10 UR	10 UR	10 U	10 U
2-Methylnaphthalene	10	10 U	10 U	4 JJ	2 JJ	10 U	10 U
Hexachlorocyclopentadiene	10	10 U	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
2,4,6-Trichlorophenol	10	10 U	10 U	10 UR	10 UR	10 U	10 U
2,4,5-Trichlorophenol	50	50 U	50 U	50 UR	50 UR	50 U	50 U
2-Chloronaphthalene	10	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	50	50 U	50 U	50 U	50 U	50 U	50 U
Dimethyl phthalate	10	10 U	10 U	10 U	10 U	10 U	10 U
Acenaphthylene	10	10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	10	10 U	10 U	10 U	10 U	10 U	10 U

Flagged Data Table
(Full Validation)

SAMPLE ID:		03GW106XXX01XX	03GW107XXX01XX	03GW108XXX01XX	03GW108XXX01XD	03GW109XXX01XX	03GW110XXX01XX
LAB NUMBER:		227654	227367	227650	227651	227653	227373
DATE SAMPLED:		11/08/88	11/07/88	11/08/88	11/08/88	11/08/88	11/07/88
MATRIX:		Water	Water	Water	Water	Water	Water
SEMI-VOLATILE ORGANIC COMPOUNDS							
UNITS: ug/l	CRDL						
3-Nitroaniline	50	50 U	50 U	50 U	50 U	50 U	50 U
Acenaphthene	10	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	50	50 U	50 U	50 UR	50 UR	50 U	50 U
4-Nitrophenol	50	50 U	50 U	50 UR	50 UR	50 U	50 U
Dibenzofuran	10	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrotoluene	10	10 U	10 U	10 U	10 U	10 U	10 U
Diethyl phthalate	10	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl phenyl ether	10	10 U	10 U	10 U	10 U	10 U	10 U
Fluorene	10	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline	50	50 U	50 U	50 U	50 U	50 U	50 U
4,6-Dinitro-2-methylphenol	50	50 U	50 U	50 UR	50 UR	50 U	50 U
N-Nitrosodiphenylamine(1)	10	10 U	10 U	10 U	10 U	10 U	10 U
4-Bromophenyl phenyl ether	10	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobenzene	10	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	50	50 U	50 U	50 UR	50 UR	50 U	50 U
Phenanthrene	10	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	10	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-butyl phthalate	10	10 U	10 U	10 U	10 U	10 U	3 JJ
Fluoranthene	10	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	10	10 U	10 U	10 U	10 U	10 U	10 U
Butyl benzyl phthalate	10	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	20	20 U	20 U	20 U	20 U	20 U	20 U
Benzo(a)anthracene	10	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	10	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	10	150 UJB	9 JJ	150 UJB	150 UJB	150 UJB	20
Di-n-octyl phthalate	10	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	10	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	10	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	10	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene	10	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10	10 U	10 U	10 U	10 U	10 U	10 U
Dilution Factor		1	1	1	1	1	1
Laboratory Method Blank		GH028228A22	GJ027731C21	GH028228A22	GH028228A22	GH028228A22	GJ027731C21
Petroleum Hydrocarbons (mg/l)	1	1 U	1 U	1 U	2.1	8.0	1 U

Flagged Data Table
(Full Validation)

	SAMPLE ID:	03GW106XXX01XX	03GW107XXX01XX	03GW108XXX01XX	03GW108XXX01XD	03GW109XXX01XX	03GW110XXX01XX
	LAB NUMBER:	227664	227382	227660	227661	227662	227391
	DATE SAMPLED:	11/08/88	11/07/88	11/08/88	11/08/88	11/08/88	11/07/88
	MATRIX:	Water	Water	Water	Water	Water	Water
METALS COMPOUNDS UNITS: ug/l	ANALYTICAL METHOD	CRDL					
Lead	F	5	160 J	3.4 []J	88 J	3.2 []J	59 J	90 J
Laboratory Method Blank			15410G	15410G	15410G	15410G	15410G	15410G

Flagged Data Table
(Full Validation)

		MW-112	MW-111	MW-111 OFFSET
SAMPLE ID:		05GW044XXX01XX	05GW046XXX01XX	05GW050XXX01XX
LAB NUMBER:		228082	228087	228086
DATE SAMPLED:		11/09/88	11/09/88	11/09/88
MATRIX:		Water	Water	Water
VOLATILE ORGANIC COMPOUNDS				
UNITS: ug/l	CRDL			
Chloromethane	10	10 U	1000 U	1300 U
Bromomethane	10	10 UJ	1000 U	1300 U
Vinyl chloride	10	10 U	1000 U	1300 U
Chloroethane	10	10 U	1000 U	1300 U
Methylene chloride	5	10 UJB	120 JJ	630 U
Acetone	10	30 UJB	580 JJ	6250 UJB
Carbon disulfide	5	5 U	500 U	630 U
1,1-Dichloroethene	5	5 U	500 U	630 U
1,1-Dichloroethane	5	5 U	500 U	630 U
1,2-Dichloroethene(Total)	5	1 JJ	500 U	630 U
Chloroform	5	1 JJ	500 U	630 U
1,2-Dichloroethane	5	5 U	500 U	630 U
2-Butanone	10	10 UR	1000 UR	1300 UR
1,1,1-Trichloroethane	5	5 U	500 U	630 U
Carbon tetrachloride	5	5 U	500 U	630 U
Vinyl acetate	10	10 U	1000 U	1300 U
Bromodichloromethane	5	5 U	500 U	630 U
1,2-Dichloropropane	5	5 U	500 U	630 U
Cis-1,3-Dichloropropene	5	5 U	500 U	630 U
Trichloroethene	5	9	500 U	630 U
Dibromochloromethane	5	5 U	500 U	630 U
1,1,2-Trichloroethane	5	5 U	500 U	630 U
Benzene	5	5 U	7900	8600
Trans-1,3-Dichloropropene	5	5 U	500 U	630 U
Bromoform	5	5 U	500 U	630 U
4-Methyl-2-pentanone	10	10 U	1000 U	1300 U
2-Hexanone	10	10 U	1000 U	1300 U
Tetrachloroethene	5	7	500 U	630 U
1,1,2,2-Tetrachloroethane	5	5 U	500 U	630 U
Toluene	5	5 U	13000	13000
Chlorobenzene	5	5 U	500 U	630 U
Ethylbenzene	5	5 U	1000	850
Styrene	5	5 U	500 U	630 U
Xylenes (Total)	5	5 U	4300	3900
Dilution Factor		1	100	125
Laboratory Method Blank		CC881115C09	C8881117A09	CC881120809

Flagged Data Table
(Full Validation)

MW-112 MW-111 MW-111 OFFSET

	CRDL	SAMPLE ID: 05GW044XXX01XX	05GW046XXX01XX	05GW050XXX01XX
		LAB NUMBER: 228082	228087	228086
		DATE SAMPLED: 11/09/88	11/09/88	11/09/88
		MATRIX: Water	Water	Water
SEMI-VOLATILE ORGANIC COMPOUNDS				
UNITS: ug/l				
Phenol	10	10 U	10 UR	10 UR
bis(2-Chloroethyl)ether	10	10 UJ	10 U	10 U
2-Chlorophenol	10	10 U	10 UR	10 UR
1,3-Dichlorobenzene	10	10 U	10 U	10 U
1,4-Dichlorobenzene	10	10 U	10 U	10 U
Benzyl alcohol	10	10 U	10 U	6 JJ
1,2-Dichlorobenzene	10	10 U	10 U	10 U
2-Methylphenol	10	10 U	10 U	10 U
bis(2-Chloroisopropyl)ether	10	10 U	10 U	10 U
4-Methylphenol	10	10 U	10 UR	10 UR
N-Nitroso-di-n-propylamine	10	10 U	10 U	10 U
Hexachloroethane	10	10 U	10 U	10 U
Nitrobenzene	10	10 U	10 U	10 U
Isophorone	10	10 U	10 U	10 U
2-Nitrophenol	10	10 U	10 UR	10 UR
2,4-Dimethylphenol	10	10 U	10 UR	10 UR
Benzoic acid	50	50 U	50 UR	19 JJ
bis(2-Chloroethoxy)methane	10	10 U	10 U	10 U
2,4-Dichlorophenol	10	10 U	10 UR	10 UR
1,2,4-Trichlorobenzene	10	10 U	10 U	10 U
Naphthalene	10	10 U	150	190
4-Chloroaniline	10	10 U	10 U	10 U
Hexachlorobutadiene	10	10 U	10 U	10 U
4-Chloro-3-methylphenol	10	10 U	10 UR	10 UR
2-Methylnaphthalene	10	10 U	130	150
Hexachlorocyclopentadiene	10	10 U	10 U	10 U
2,4,6-Trichlorophenol	10	10 U	10 UR	10 UR
2,4,5-Trichlorophenol	50	50 U	50 UR	50 UR
2-Chloronaphthalene	10	10 U	10 U	10 U
2-Nitroaniline	50	50 U	50 U	50 U
Dimethyl phthalate	10	10 U	10 U	10 U
Acenaphthylene	10	10 U	10 U	10 U
2,6-Dinitrotoluene	10	10 U	10 U	10 U

NA = Not available; will be reported when received from laboratory.

Flagged Data Table
(Full Validation)

	SAMPLE ID:	05GW044XXX01XX	05GW046XXX01XX	05GW050XXX01XX
	LAB NUMBER:	228082	228087	228086
	DATE SAMPLED:	11/09/88	11/09/88	11/09/88
	MATRIX:	Water	Water	Water
SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/l	CRDL			
3-Nitroaniline	50	50 U	50 U	50 U
Acenaphthene	10	10 U	10 U	10 U
2,4-Dinitrophenol	50	50 U	50 UR	50 UR
4-Nitrophenol	50	50 U	50 UR	50 UR
Dibenzofuran	10	10 U	10 U	10 U
2,4-Dinitrotoluene	10	10 U	10 U	10 U
Diethyl phthalate	10	10 U	10 U	10 U
4-Chlorophenyl phenyl ether	10	10 U	10 U	10 U
Fluorene	10	10 U	10 U	10 U
4-Nitroaniline	50	50 U	50 U	50 U
4,6-Dinitro-2-methylphenol	50	50 U	50 UR	50 UR
N-Nitrosodiphenylamine(1)	10	10 U	10 U	10 U
4-Bromophenyl phenyl ether	10	10 U	10 U	10 U
Hexachlorobenzene	10	10 U	10 U	10 U
Pentachlorophenol	50	50 U	50 UR	50 UR
Phenanthrene	10	10 U	10 U	10 U
Anthracene	10	10 U	10 U	10 U
Di-n-butyl phthalate	10	10 U	2 JJ	10 U
Fluoranthene	10	10 U	10 U	10 U
Pyrene	10	10 U	10 U	10 U
Butyl benzyl phthalate	10	10 U	10 U	10 U
3,3'-Dichlorobenzidine	20	20 U	20 U	20 U
Benzo(a)anthracene	10	10 U	10 U	10 U
Chrysene	10	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	10	60 UJB	60 UJB	63 JB
Di-n-octyl phthalate	10	10 U	10 U	10 U
Benzo(b)fluoranthene	10	10 U	10 U	10 U
Benzo(k)fluoranthene	10	10 U	10 U	10 U
Benzo(a)pyrene	10	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	10	10 U	10 U	10 U
Dibenzo(a,h)anthracene	10	10 U	10 U	10 U
Benzo(g,h,i)perylene	10	10 U	10 U	10 U
Dilution Factor		1	1	1
Laboratory Method Blank		GJ028531A21	GJ028531A21	GJ028531A21
Petroleum Hydrocarbons(mg/l)	1	1 U	6.6	5.1

Flagged Data Table
(Full Validation)

	MW-112	MW-111	MW-111 OFFSET
SAMPLE ID:	05GW044XXX01XX	05GW046XXX01XX	05GW050XXX01XX
LAB NUMBER:	228089	228095	228092
DATE SAMPLED:	11/09/88	11/09/88	11/09/88
MATRIX:	Water	Water	Water

METALS COMPOUNDS UNITS: ug/l	ANALYTICAL METHOD	CRDL			
Lead	F	5	7.9 J	135 J	112 J
Laboratory Method Blank			15410G	15410G	15410G

Laboratory Report of Analysis

Sampler Blank

	SAMPLE ID:	05BS001XXX01XX	05BS002XXX01XX
	LAB NUMBER:	227652	227645
	DATE SAMPLED:	11/08/88	11/08/88
	MATRIX:	Water	Water
VOLATILE ORGANIC COMPOUNDS UNITS: ug/l	CRDL		
Chloromethane	10	10 U	10 U
Bromomethane	10	10 U	10 U
Vinyl chloride	10	10 U	10 U
Chloroethane	10	10 U	10 U
Methylene chloride	5	2 JB	2 JB
Acetone	10	10 U	18 B
Carbon disulfide	5	5 U	5 U
1,1-Dichloroethene	5	5 U	5 U
1,1-Dichloroethane	5	5 U	5 U
1,2-Dichloroethene(Total)	5	5 U	5 U
Chloroform	5	1 J	6
1,2-Dichloroethane	5	5 U	5 U
2-Butanone	10	10 U	10 U
1,1,1-Trichloroethane	5	5 U	5 U
Carbon tetrachloride	5	5 U	5 U
Vinyl acetate	10	10 U	10 U
Bromodichloromethane	5	5 U	5 U
1,2-Dichloropropane	5	5 U	5 U
Cis-1,3-Dichloropropene	5	5 U	5 U
Trichloroethene	5	5 U	5 U
Dibromochloromethane	5	5 U	5 U
1,1,2-Trichloroethane	5	5 U	5 U
Benzene	5	5 U	5 U
Trans-1,3-Dichloropropene	5	5 U	5 U
Bromoform	5	5 U	5 U
4-Methyl-2-pentanone	10	10 U	10 U
2-Hexanone	10	10 U	10 U
Tetrachloroethene	5	5 U	5 U
1,1,2,2-Tetrachloroethane	5	5 U	5 U
Toluene	5	5 U	5 U
Chlorobenzene	5	5 U	5 U
Ethylbenzene	5	5 U	5 U
Styrene	5	5 U	5 U
Xylenes (Total)	5	5 U	5 U
Dilution Factor		1	1
Laboratory Method Blank		CB881111B13	CB881110B11

Laboratory Report of Analysis

Sampler Blank

	SAMPLE ID:	05BS001XXX01XX	05BS002XXX01XX
	LAB NUMBER:	227652	227645
	DATE SAMPLED:	11/08/88	11/08/88
	MATRIX:	Water	Water
SEMI-VOLATILE ORGANIC COMPOUNDS UNITS: ug/l	CRDL		
Phenol	10	10 U	10 U
bis(2-Chloroethyl)ether	10	10 U	10 U
2-Chlorophenol	10	10 U	10 U
1,3-Dichlorobenzene	10	10 U	10 U
1,4-Dichlorobenzene	10	10 U	10 U
Benzyl alcohol	10	10 U	10 U
1,2-Dichlorobenzene	10	10 U	10 U
2-Methylphenol	10	10 U	10 U
bis(2-Chloroisopropyl)ether	10	10 U	10 U
4-Methylphenol	10	10 U	10 U
N-Nitroso-di-n-propylamine	10	10 U	10 U
Hexachloroethane	10	10 U	10 U
Nitrobenzene	10	10 U	10 U
Isophorone	10	10 U	10 U
2-Nitrophenol	10	10 U	10 U
2,4-Dimethylphenol	10	10 U	10 U
Benzoic acid	50	50 U	50 U
bis(2-Chloroethoxy)methane	10	10 U	10 U
2,4-Dichlorophenol	10	10 U	10 U
1,2,4-Trichlorobenzene	10	10 U	10 U
Naphthalene	10	10 U	10 U
4-Chloroaniline	10	10 U	10 U
Hexachlorobutadiene	10	10 U	10 U
4-Chloro-3-methylphenol	10	10 U	10 U
2-Methylnaphthalene	10	10 U	10 U
Hexachlorocyclopentadiene	10	10 U	10 U
2,4,6-Trichlorophenol	10	10 U	10 U
2,4,5-Trichlorophenol	50	50 U	50 U
2-Chloronaphthalene	10	10 U	10 U
2-Nitroaniline	50	50 U	50 U
Dimethyl phthalate	10	10 U	10 U
Acenaphthylene	10	10 U	10 U
2,6-Dinitrotoluene	10	10 U	10 U

Laboratory Report of Analysis

Sampler Blank

SAMPLE ID:		05BS001XXX01XX	05BS002XXX01XX
LAB NUMBER:		227652	227645
DATE SAMPLED:		11/08/88	11/08/88
MATRIX:		Water	Water
SEMI-VOLATILE ORGANIC COMPOUNDS			
UNITS: ug/l	CRDL		
3-Nitroaniline	50	50 U	50 U
Acenaphthene	10	10 U	10 U
2,4-Dinitrophenol	50	50 U	50 U
4-Nitrophenol	50	50 U	50 U
Dibenzofuran	10	10 U	10 U
2,4-Dinitrotoluene	10	10 U	10 U
Diethyl phthalate	10	10 U	10 U
4-Chlorophenyl phenyl ether	10	10 U	10 U
Fluorene	10	10 U	10 U
4-Nitroaniline	50	50 U	50 U
4,6-Dinitro-2-methylphenol	50	50 U	50 U
N-Nitrosodiphenylamine(1)	10	10 U	10 U
4-Bromophenyl phenyl ether	10	10 U	10 U
Hexachlorobenzene	10	10 U	10 U
Pentachlorophenol	50	50 U	50 U
Phenanthrene	10	10 U	10 U
Anthracene	10	10 U	10 U
Di-n-butyl phthalate	10	10 U	10 U
Fluoranthene	10	10 U	10 U
Pyrene	10	10 U	10 U
Butyl benzyl phthalate	10	10 U	10 U
3,3'-Dichlorobenzidine	20	20 U	20 U
Benzo(a)anthracene	10	10 U	10 U
Chrysene	10	10 U	10 U
bis(2-Ethylhexyl)phthalate	10	10 U	10 U
Di-n-octyl phthalate	10	10 U	10 U
Benzo(b)fluoranthene	10	10 U	10 U
Benzo(k)fluoranthene	10	10 U	10 U
Benzo(a)pyrene	10	10 U	10 U
Indeno(1,2,3-cd)pyrene	10	10 U	10 U
Dibenzo(a,h)anthracene	10	10 U	10 U
Benzo(g,h,i)perylene	10	10 U	10 U
Dilution Factor		1	1
Laboratory Method Blank		GH028228A22	GH028228A22
Petroleum Hydrocarbons (mg/l)	1	1 U	1 U

12-Apr-90

PROJECT: Delaware Air National Guard - Wilmington

Laboratory Report of Analysis

SAMPLE ID: SAMPLER BLANK
LAB NUMBER: 220674
DATE SAMPLED: 10/03/88
MATRIX: Water

METALS COMPOUNDS UNITS: ug/l	ANALYTICAL METHOD	CRDL	
Lead	F	5	3 []

Laboratory Method Blank

Laboratory Report of Analysis

Trip Blank

	SAMPLE ID:	058T001XXX01XX	058T002XXX01XX	058T003XXX01XX
	LAB NUMBER:	227376	227655	228088
	DATE SAMPLED:	11/07/88	11/08/88	11/08/88
	MATRIX:	Water	Water	Water
VOLATILE ORGANIC COMPOUNDS UNITS: ug/l	CRDL			
Chloromethane	10	10 U	10 U	10 U
Bromomethane	10	10 U	10 U	10 U
Vinyl chloride	10	10 U	10 U	10 U
Chloroethane	10	10 U	10 U	10 U
Methylene chloride	5	5 U	5 U	5 U
Acetone	10	6 JB	6 JB	9 JB
Carbon disulfide	5	5 U	5 U	5 U
1,1-Dichloroethene	5	5 U	5 U	5 U
1,1-Dichloroethane	5	5 U	5 U	5 U
1,2-Dichloroethene(Total)	5	5 U	5 U	5 U
Chloroform	5	5 U	5 U	5 U
1,2-Dichloroethane	5	5 U	5 U	5 U
2-Butanone	10	10 U	10 U	10 U
1,1,1-Trichloroethane	5	5 U	5 U	5 U
Carbon tetrachloride	5	5 U	5 U	5 U
Vinyl acetate	10	10 U	10 U	10 U
Bromodichloromethane	5	5 U	5 U	5 U
1,2-Dichloropropane	5	5 U	5 U	5 U
Cis-1,3-Dichloropropene	5	5 U	5 U	5 U
Trichloroethene	5	5 U	5 U	5 U
Dibromochloromethane	5	5 U	5 U	5 U
1,1,2-Trichloroethane	5	5 U	5 U	5 U
Benzene	5	5 U	5 U	5 U
Trans-1,3-Dichloropropene	5	5 U	5 U	5 U
Bromoform	5	5 U	5 U	5 U
4-Methyl-2-pentanone	10	10 U	10 U	10 U
2-Hexanone	10	10 U	10 U	10 U
Tetrachloroethene	5	5 U	5 U	5 U
1,1,2,2-Tetrachloroethane	5	5 U	5 U	5 U
Toluene	5	5 U	5 U	5 U
Chlorobenzene	5	5 U	5 U	5 U
Ethylbenzene	5	5 U	5 U	5 U
Styrene	5	5 U	5 U	5 U
Xylenes (Total)	5	5 U	5 U	5 U
Dilution Factor		1	1	1
Laboratory Method Blank		CB881110B11	CB881110B11	CC881115C09

Laboratory Report of Analysis

Filtration Blank

SAMPLE ID:	05BF001XXX01XX	05BF002XXX01XX
LAB NUMBER:	227667	227665
DATE SAMPLED:	11/08/88	11/08/88
MATRIX:	Water	Water

METALS COMPOUNDS UNITS: ug/l	ANALYTICAL METHOD	CRDL		
Lead	F	5	54 SN	124 N
Laboratory Method Blank			15410G	15410G